**Application Example**

**Project name:** The Garden of Possibility  
**Total amount of request:** $10,000  
**Province program implemented:** Alberta  
**Grade level(s):** Kindergarten, Grade 1, Grade 2, Grade 3, Grade 4, Grade 5, Grade 6  
**Number of Students:** 300  
**Number of Teachers:** 20

**Energy topic(s):** Renewable/Alternative Energy Sources, Energy Conservation, Energy Efficiency

**Relates to topic(s):** The Garden of Possibility will allow us to investigate energy conservation through indoor and outdoor gardening. We will use a variety of techniques to learn about and actively conserve energy, such as growing locally grown food versus imported food, calculate food miles, collect water in rain/snow barrels thus eliminating the need for the use of treated city water, and using horticultural techniques such as permaculture to grow plants suited to this climate and ecosystem. This project will allow our students to engage directly with their local environment and understand the effects of energy conservation firsthand. This knowledge is vital for students to learn as our renewable and nonrenewable resources require consideration and care in order for our communities to remain sustainable.

**Summary:** Preschool to grade six students will explore the importance of energy conservation through gardening, with the introduction and usage of environmentally aware and appropriate methods such as permaculture. Students will develop environmental literacy as they learn to grow a variety of plants, both indoors and outdoors. They will conserve energy and water through the usage of horticulture methods such as insulation, passive solar cold frames, and rain barrels while growing plants that are suited to this climate, whether indoors or outdoors, for year-round gardening experiences.

**Safety:** Attention will be paid to proper outdoor clothing, sun protection, and appropriate safety equipment. Proper tool handling will be taught to students prior to the usage of equipment such as shovels, hammers or rain barrels, and students will be supervised at a ratio of 1:10 during activities which require new or unfamiliar tools. Staff will be trained in these areas by professionals when needed.

**PROJECT DESCRIPTION**

**Student Learning and Experience**

**Grant Reader Comments:** A note about school gardens - this has become a popular choice for teachers applying to the A+ for Energy project. It is crucial to keep in mind that A+ for Energy is about, just that, energy. A community garden can be a learning tool for energy, but it's important to focus on the energy learning outcomes in your application.

Growing food is an activity that has deep roots in cultures around the world. We are excited to introduce our students to the practice of growing and cultivating plants, which provides direct experiential learning that allows students to see the positive implications of energy conservation in their lives, their food sources, and their environment.

We will use sustainable horticultural methods such as permaculture, using a minimum of energy and water to create conditions of success for growing plants suited to this region of Alberta. Permaculture is a system based on creating a sustainable, productive garden that can provide sustenance for the present as well as for the future.

Our plan is to provide a garden bed or cold frame for each grade in order for students, teachers, and outside partners to work together to build a meaningful program to explore the links between energy conservation and gardening. There are two major benefits to this:

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First, teachers are able to create meaningful programming that will fit in directly with that specific grade’s program of study. This will allow teachers to design inquiry questions and projects to enhance conservation, including the possibilities of energy conservation through gardening, particularly the idea of ‘food miles,’ or the amount of greenhouse gases produced when food is produced, packaged, and shipped to us from different provinces or countries versus food that is grown more locally. We will also be investigating the water requirements of various types of plants, to see which is most suitable in our climate, and alternative ways of providing water in an environmentally sound manner.

Students will connect with the garden, personalizing their section through design and layout, and inquiry, which allows students to go deeper with their questioning and learning about what their garden’s purpose is and how energy conservation plays a vital role. It involves asking questions, proposing ideas, observing, experimenting, and analyzing results as well as reflection. In this case, we are providing the garden beds as the object for inquiry in which students can explore the topic of energy conservation.

Students in all grades will be responsible for the following aspects of their grade’s garden bed.

First, students will work together and with their teacher to determine what type of garden will work best for them, why, and what energy conservation means, both in general and in the context of this garden.

Second, students will work with experts to research the types of plants they will grow, organize the most efficient layout of their plot, and learn how to best create and care for a successful garden. They will investigate the energy resources that are required to grow a garden, whether indoors or outdoors, and why energy conservation is an important consideration in the planning phase. This will include considerations such as rain barrels, insulation for garden beds, cold frames, and other innovative techniques.

Third, students will actively participate in the construction of their garden bed or cold frame, the planting of seeds and garden maintenance, harvesting, and reflecting on how successful they were at meeting their goals. Gardens, especially in northern climates, can be challenging and fraught with the possibility of failure. Students may choose to create indoor gardens over the winter months to compare to their outdoor gardens during warmer seasons. However, the garden beds will be able to be used year after year, allowing students to take lessons learned from the previous year and apply them to next year’s inquiry project. Students will also reflect on how energy conservation worked in their garden and what they could do next time to conserve more energy.

Finally, students will be responsible for teaching their community the purpose and value of their garden, ins and outs of how to garden and the role their bed played in energy conservation. The sharing of their knowledge will reinforce the principles of energy conservation within the school but also allow students to spread their ideas to the greater community through conversations with parents, experts, and members of the community.

Both gardening and energy conservation connect closely with the elementary curriculum. In broad terms, this project will allow students to develop energy and environmental literacy understandings and awareness, as well as building skills such as questioning, research, communication, presentation, and team building.

Our goal is to engage our students in a cross-curricular project focused on energy knowledge, conservation, and place-based education. River Valley School is an inclusive institution that invites all students to come and participate in an inquiry style of learning. Our students come from a variety of backgrounds and we provide programming for typically developing students as well as those with exceptionalities such as giftedness, English Language Learners, learning disabilities, Attention Deficit Disorder, and Autism Spectrum Disorder. Through Universal Design of Learning and an emphasis towards hands on experiential
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learning, all students, regardless of level of abilities, will be able to participate, learn, and produce at each stage of the project. Additionally, we focus on providing guiding questions using Bloom’s Taxonomy for children to help them think deeply about the topics introduced, dissected, and discussed, which assists them in making their own conclusions about energy conservation, horticulture, community, and the environment.

It is important to keep in mind that energy needs to be the focus of your project. In this case the applicant has done a great job tying together the activity (building the garden) with energy sources, use and conservation.

Within the Montessori philosophy, the needs of plants and animals are an integral part of the philosophy. It is not segmented or unitized, but the children will follow a stream or a thread of this topic through all areas of their lessons. Depending on their level, students may learn about the leaf as a chemical factory, the needs of plants and animals, and the place of people within the biome. This will add to our concept of the biome being a community of plants and animals living in a large geographic area, living in a temperate biome, and exploring deeper into our existing biome. A whole to parts approach is necessary in this philosophy, to give the children a background of information and understanding of the scientific principles before they encounter the garden physically. The garden will also be used as an impressionistic lesson that will impress upon the child the tangible evidence of their previous studies, which serves to solidify their learning. These classes also follow the Alberta Program of Studies in conjunction with Montessori curriculum outcomes.

The Garden of Possibility project links directly into many components of each grade’s science and social studies Program of Studies. In our early learning programs, consisting of Three Year Old ‘Tots,’ Junior Kindergarten, Kindergarten and Montessori Casa (preschool ages 3-5), gardening and energy conservation are connected to program themes of exploring materials, building structures, and exploring, investigating, and describing the world.

They will try new things, take risks with their learning, and understand that their actions have consequences. For example, if we forget to water our plants, they might die, but if we take care of our plants, we might grow delicious, nutritious food or beautiful flowers. Children will learn that they can share the garden harvest and teach others how to care for plants. They will work with their older grade ‘buddy classes’ to understand the value of energy conservation and the correlation to gardening, such as using rain barrels for water whenever possible to minimize demands on treated city water.

In Grade 1, students explore Seasonal Changes, Building Things, and The Needs of Plants and Animals which link directly to gardening and the use of energy. Students can look at how the garden will change throughout each season and the correlating changes in energy needs. They will investigate design and structure and participate in building the garden boxes, and learn to take care of plants. In Social Studies, students are introduced to the concept of citizenship and how they fit into their community. The garden bed provides a gateway for this inquiry and allows students to see how gardens can be a place of community interaction where ideas about energy usage and conservation can be exchanged.

In Grade 2, the Science Program of Studies focuses on Small Crawling and Flying Animals. The garden bed will allow students to look first hand at what type of creatures might use this area. Students can learn about which plants provide the best food and shelter for which animals and how energy conservation can positively affect survival for these creatures. They can also work with experts to design gardens that attract or repel certain types of insects, such as butterflies or mosquitoes. This further impacts energy conservation goals, as the right kinds of plants will reduce the need for pesticides, which reduces greenhouse gases produced through manufacture and shipment of these products. Students can use their garden beds to analyze what foods grow best where and what energy demands are needed depending on where you live and what you grow.

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In Grade 3, students look at Building With a Variety of Materials, Testing Materials, and Animal Life Cycles. Here, students can explore what type of materials are best used in the construction of a garden bed or cold frame, where those materials might come from, and what energy costs are associated with building. Students, similar to Grade 2, can use their garden bed to see the life cycle of certain animals, their connection to the nutrient cycle, and how energy conservation affects animals in nature. Additionally, students study India, Ukraine, Peru, and Tunisia in Social Studies. The building and designing of their garden bed will allow students to compare and contrast gardens from different parts of the world and how those countries meet their energy requirements and conservation needs.

In Grade 4, Waste in our World and Plant Growth and Changes are a perfect fit with gardening and energy conservation. Students can inquire into the ways that energy is wasted, investigate options for energy conservation, and plan strategies to conserve energy with the design and maintenance of their garden bed while observing plant growth. Another point of connection with the Grade 4 curriculum is the study of the regions of Alberta, and the plants and animals native to each region. Students will research and grow plants that will survive and thrive in the Parkland region in which Calgary is located.

In Grade 5, the Wetlands, Weather, and Electricity science units, along with the Social Studies focus on regions of Canada, will be fantastic links to gardening and energy conservation. Weather and climate are factors in gardening success and permaculture is a technique that will be useful in determining the types of plants that will be successful in this area, with a minimum of energy and water required.

In Grade 6, themes of Trees and Forests will be main focus garden inquiry, but will also link up with other areas such as democracy and aerodynamics. There is interest in exploring the concept of a ‘food forest,’ which is based on the principles of forest growth, and requires no fossil fuel energy, and little human intervention. Although a food forest centres on a fruit tree, and this may not be feasible in this year of inquiry, existing trees on our school site can be studied and utilized through the year. Aerodynamics will be useful for discussing and designing garden features such as wind breaks, and discussions of government systems can be centered around the legality and potential of urban gardening as a movement.

This project does an excellent job of tying in curriculum objectives with actions to be taken by the program, that is, curriculum objectives are described in context, not simply copied from the Program of Studies.

Cross-curricular connections are extremely well thought out in this application.

Creativity

Our school is a dual stream, inquiry-based and Montessori school. As such, we believe that students should be given the opportunity to answer big questions, as well as the opportunity to self direct their learning as often as possible. Students will have the opportunity to inquire deeply about this topic in a way that is meaningful to them, through the use of inquiry questions, self-guided project time (‘genius hour’ or ‘passion projects’), and multi-modal methods of expression.

Our school values student choice in engagement and expression of learning. Students will be encouraged to question, research, brainstorm, and develop new skills as they become immersed in this project. Through inquiry, our students will help direct this project and co-create meaningful and diverse learning experiences, tailored to their own experiences and interests. During passion projects, also called Genius Hour time, students are given the opportunity research and learn about anything that is interesting or important to them. In the past, this has resulted in students learning how to knit, bake bread, make chemical reaction volcanoes, and re-enact famous wars. This activity is a natural fit with experiential learning in the garden, and will allow our students to follow their interests in gardening. Both Montessori and inquiry value the

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students’ role in shaping and directing their own learning, and allowing space, time, and support to do so. To this end, students will be given access to master gardeners through various community partners, including Little Green Thumbs and the Canadian Wildlife Federation, so that they can better inquire and engage in the topic of energy conservation and gardening.

This project is centered around each class taking the principles of energy conservation and gardening, linked with their specific curriculum areas, to an inquiry of their choosing. Based on this year’s students and their interests, teachers have brainstormed potential garden themes and projects, including food forests, butterfly gardens, native plant gardens, ‘pizza’ gardens, indoor ‘salad’ and microgreen gardens, among many others. As a school, we are excited about expanding current indoor gardening practices, which are either seasonal or classroom specific, to a more comprehensive, whole-school, experiential and place-based inquiry that connects us to our environment and provides an enriched understanding of the world around us.

River Valley School is fortunate to have a full time art teacher and a full time drama teacher for all grades, both of whom have expressed excitement and interest in working with students on the topic of energy conservation and gardening. Students will be given the opportunity to choose artistic avenues for projects that will connect with this project. As these teachers work with the entire student population, the possibilities for these avenues are exciting and will enrich and expand our students’ experience in this project.

While this section focuses on the creative nature of the school, it could have focused a bit more on how this particular project is creative. Remember to consider how your project is a creative approach to teaching and learning about energy in Alberta.

Timeline

In designing our timeline, we considered the fact that students need time to learn, build, reflect in their creation, and to try again based on failures and successes, as this is truly how students learn. The goal is to design a program that can be repeated for future years.

- **August**: Initial Professional Development
- **September - December**: In school workshops for students with garden and environmental experts, with a focus on energy conservation techniques and purpose.
- **January - March**: Garden design of physical spaces and energy and water sources. Preparation of land, building garden boxes.
- **April - May**: Germination indoors, then transplanting outdoors.
- **June - August**: Initial harvest, transition to summer care rotation between students, parents, and community partners.

This section is okay, but could have used a few more specific milestones - if for no other reason than to keep your own project on track!

Partnerships & Sustainability

This project will involve community partnerships within our school population, the community of Bowness, and the City of Calgary, as well as national organizations such as Canadian Wildlife Federation (CWF). We will work with various community groups to ensure that this project provides ‘real world’ experiences and creates valuable connections to the world around our school. One of the pillars of RVS culture is global citizenship, and as leaders, we ask that all of our students look for ways to participate in and give back to the community. As part of our commitment to this value, we participate as a “We Act” school as a part of the Free the Children organization, to ‘be the change’ and make the world a better place. We have made contact with Grow Calgary, an organization

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that grows fresh food for the Calgary Inter-faith Food Bank, to work with them as a community partner to help grow food for those who need it most. In the current school year, some classes have been working with Sarah Haney and Chrissy Begus, local environmental educators and gardeners through Puzzle Permaculture, on permaculture principles such as garden design, waste and decomposers, and succession planning. We plan to continue and expand this relationship into the next school year through the Garden of Possibility project.

We have also made connections with the CWF’s education department, which has a mandate to connect kids with nature in meaningful and lasting ways. They have pledged to give us access to their gardening expert, Dr. Ken Beattie, as well as a starter garden of $250 worth of pollinator plants. We plan to work with CWF to create our gardens in a way that is valuable to the local environment and creates habitat for local animals and insects.

We are within walking distance of Sunnyside Home and Garden Centre, and we plan to create an educational partnership with this organization to assist us in our efforts to conserve energy and grow successful gardens. We will also continue our work with Little Green Thumbs program through Ag for Life and the Calgary Zoo, and will continually look for other avenues of connection and partnership throughout the life of this project.

Once these gardens are in place, this to be a point of connection with our various levels of communities, including the classroom and the school, reaching outwards to connect with and learn from other schoolyard gardening programs in the city, the province, and the country. The lasting legacy of this project will be awareness and understanding of energy conservation, the importance of place and the environment, as well as the skills necessary to grow our own food. The plans that we put into place today will serve the community tomorrow, and the partnerships that we build with community partners will be productive for many years.

This is an exemplary description of partnerships in the community. Not only making a list, but also pointing out the level of engagement and how the partners will be involved.

Evaluation Plan

We will be using a variety of formative and summative assessment to ensure that learning and understanding is taking place. Students will complete an age-appropriate survey regarding their gardening experience, knowledge, and interests at the beginning and end of the year. They will also regularly self-reflect on their learning journey through visual and written journaling techniques. Students will consider their personal connections through creative writing, sketching, poetry, and spatial awareness.

The students will also work together to create a photojournalism project that records the life of their gardens through chronological photographs. This project will capture both successes and failures throughout the year, and will serve as a record of the first year of the project.

Our students will be sharing their research and knowledge with the school in the form of assemblies, posters, classroom presentations, and social media, which will enable whole school understanding and knowledge building. Classes will be encouraged to share evidence of their learning and self-reflections through a garden specific blog as well as social media such as Twitter, which will lead to connections with other classes and community partners.

At our school, we also celebrate our great work throughout the year through a showcase of learning called Mini We Day. We plan to continue this tradition next year, and celebrate our failures, successes, and learning with our school community.

This section could have pointed out how the students would build knowledge and understanding about energy, and how building the garden provided the opportunity to demonstrate this knowledge.

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Project Budget

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Materials (wood, nails, soil, gravel, etc. Maximum of 20 garden boxes)</td>
<td>$5,000</td>
</tr>
<tr>
<td>Tools (shovels, pots, gardening gloves, safety goggles, etc.)</td>
<td>$1,000</td>
</tr>
<tr>
<td>Gardening Supplies (plants, seeds, etc.)</td>
<td>$2,000</td>
</tr>
<tr>
<td>Professional Development</td>
<td>$1,000</td>
</tr>
<tr>
<td>Student Workshops</td>
<td>$1,000</td>
</tr>
<tr>
<td>Total expenses</td>
<td>$10,000</td>
</tr>
</tbody>
</table>

This budget could have been more detailed - Important: Be careful not to reference items in the budget that don’t appear or are not explained in detail in the proposal. For instance, in this section there is no mention of what student workshops are, and why/how they would total $1000.

Explanatory notes: We have been advised by our partner, Puzzle Permaculture, that the garden beds will be the bulk of our costs, with plants and tools being a close second. As a school, we have been involved in small scale classroom gardening, both indoors and outdoors, but we will need community partners to help us learn how to garden effectively and guide us through our first year in this project, so professional development and student workshops are a must.

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