Sustainability Guide For Educators

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1.0 Introduction

Sustainability has long been a topic of concern in the global community since its rise in popularity after the Brundtland Commission in 1987 (World Commission on Environment and Development, 1987).The recent rise of attention placed on sustainability, due to worsening issues like the climate crisis and global warming, has made many people question how they can be more sustainable and how they can spread the word of sustainability. This is especially true for educators as they are the foundation of knowledge for the future generation. Teaching sustainability and implementing it into schools can often be overwhelming at first glance. This is why we have created a sustainability guide for educators to help provide instructions on the steps that can be taken to create a greener future at your school. This guide is perfect for classroom teachers of any grade, trying to make a change within their school, and make sustainability a more integral part of their school's culture and values.

1.1What is sustainability?Why is it important?

Before getting into how to create a more sustainable school, it is important to understand what sustainability is. Although there are a number of definitions that can be used to describe it, one of the most commonly accepted definitions was presented in 1987 by the Brundtland Commission. This definition states that "Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their needs" (World Commission on Environment and Development, 1987). It is important to note that this definition does not cover the other disciplines under sustainability and only looks at the environmental aspect. Sustainability is much more than just environmental sustainability. When looking at the term sustainability as a whole, it is essential to recognize that for true sustainability to occur the environmental, social, and economic aspects of sustainability must be accounted for. Although there are many ways to visually depict sustainability, a good way to think about it is as a nested hierarchy where the economic aspect is nested within the social aspect which is nested in the environmental aspect of sustainability (figure 1). This diagram is especially useful as it recognizes that an economy cannot exist without people and people cannot exist without the environment.

1.2 About the Sustainability Guide

Environmental sustainability is essential to ensure social and economic sustainability, which is why the environmental aspect is the main focus of this guide. This guide includes step-by-step instructions on how sustainable practices and values can be implemented in your school more seamlessly. The rest of this sustainability guide explores how to get started, how to implement sustainability into the classroom and curriculum, how to implement sustainability into the school, as well as some examples of the best practices. We are hoping that with this information, bringing sustainability into your school will be fun and easy.

Figure 1: The nested hierarchy model of sustainability. Credit M.Stojkoksa

Sustainability is how we will ensure this world is capable of supporting the future generations. It is the only way that we will be able to make a prosperous life more achievable for everyone. Integrating these values into a school setting is essential in developing a generation of environmentally, socially, economically, and politically conscious individuals. Here are some words of encouragement from a GreenLearning Challenge winner that recognizes the importance of sustainability within schools; "I strongly recommend that the school use a whole school approach whenever possible. Climate change and energy efficiency should be taught across the curriculum, but every school needs a champion to push this topic." - Laura Myers (3rd place School Earth Hour, 2nd place Flood:ED 2020-2021).

2.0 Getting Started

One of the hardest parts of any project is getting the ball rolling. Although it may seem intimidating, sustainability is attainable in any school. Any step taken to promote sustainability is a step in the right direction, no matter how small. When looking to implement sustainability it is important to gather information about your school to determine which areas need improvement and which areas are already sustainable. Next, you must find out who are the stakeholders of sustainability at your school. Finally, it is time to create a school sustainability plan (more information in 2.2). Throughout the process of making your school more sustainable, it is essential that you follow an adaptive style of management (more information in 2.3).

2.1 Stakeholders

Sustainability is such a cross-disciplinary topic which is why it is important to start off this process by figuring out who you will have to be working with in order to create a more sustainable school. Some common stakeholders that can be found in many schools are;

- Principals
- Building facilitators (eg. maintenance and janitors)
- Sustainability coordinators
- Other staff and faculty
- Learners
- Parents

Each one of these stakeholders plays a role in the sustainability of your school and it is likely that you will have to be in communication with them throughout this process. Later on in this guide, we will explain how to reach out to these stakeholders and express the goals you have for making your school more sustainable.

2.2 Adaptive Management

Creating a sustainable school involves a significant amount of decision-making and management in order to ensure the changes being made produce results. A very effective form of administration, especially within sustainability, is adaptive management (figure 2). This form of management is a cyclical process that requires individuals to repeatedly assess, implement, evaluate and adjust in order to address uncertainty in decisions. There may be situations that arise at your school that are not covered in this sustainability guide. In these cases, adaptive management is an effective tool that can be used to figure out how the situation can be resolved.

These situations are great opportunities to foster innovation within your school and encourage people to work together to come up with solutions that can help improve sustainability. Managing the collaborative effort of problem-solving could be more efficient when following the adaptive management guide. The steps required to follow this guide are;

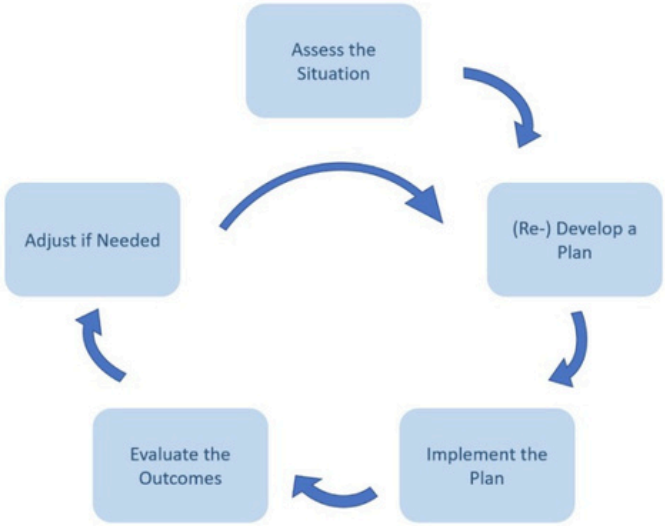


Figure 2: Adaptive Management Cycle

- Step 1: Assess the situation - In this step you must collect information and gain an in-depth understanding of the situation at hand. Whether it be a minor issue or a larger area requiring improvement, a concrete understanding of all of its aspects will be helpful in the future parts of the process.
- Step 2: (Re-) Develop a plan - In this step, it is best to work collaboratively with people that have good knowledge of the issue or are stakeholders in the situation. Once a team of individuals is created (if needed), then a plan can begin being developed on how the situation can be solved.
- Step 3: Implement the plan - This step entails putting the plan, created in the previous step, into action. This can be done individually or as a group.
- Step 4: Evaluate the outcome - In this step, you need to decide whether or not your plan was implemented properly and whether the issue was properly addressed with this plan. Some questions you could ask yourself at this stage is; Did this plan solve the issue? Could this issue be solved more efficiently? Is there anything that can be improved?
- Step 5: Adjust if needed and repeat - After an evaluation of the success of the outcomes you can now decide on adjustments that can be made to improve the solution. The process can then be repeated until the desired solution is reached.

You may find that your school can improve sustainability in an area that was not mentioned in this guide. Because of this, the process of adaptive management will be useful in finding solutions. Although this process may be tedious, it helps create optimal outcomes and allows for multiple points of monitoring and assessment to ensure the best decision is made.

2.3 School Sustainability Plan

Creating a structured approach for attaining sustainability in your school is the first and most important step in the sustainability implementation process. This part of the process aligns with the "develop a plan" step in adaptive management. Before beginning this portion of the process, it is essential to understand what a school sustainability plan is. In short, the school sustainability plan is a collaborative document that outlines the sustainability goals that the school has set. It must recognize that sustainability is a synergetic effort and requires whole-school planning, with the help and input of the stakeholders involved. The school sustainability plan should cover how the school intends to better its sustainability in terms of education, governance, building operations and more.

To create a sustainability plan, the first two steps of adaptive management can be followed, beginning with the assessment of the situation. It is important for schools to recognize the steps they have already taken towards sustainability as well as the steps they need to take in order to build a more sustainable school. Some aspects to look into during your assessment are;

- Curriculum: Are you teaching learners about sustainability? Is it implemented on a classroom education level?
    - You can determine this by evaluating whether the term sustainability is mentioned in lessons or whether there is mention of preserving resources for future generations. The other aspects of sustainability (economic, social, and political) are also good indicators as to whether or not sustainability is being implemented into the curriculum.
- Extra-curriculars: Are there eco-clubs where students can get involved?
- Current Issues: What is happening in and around your community that can impact sustainability? How can you play a role in bettering community environmental issues?
- School Building: Is your building up to sustainability standards? Is your school energy efficient? (See section 5.2 for more information of building sustainability standard)
- Awareness: Is the school community aware of sustainability and where their school stands in terms of being a sustainable school?
    - Developing an understanding of the baseline level of school awareness can be measured through school-wide surveys. These surveys can focus on gathering information about learners' current level of knowledge of environmental issues and sustainability.

After an assessment is made on the potential next steps for your school a sustainability plan can be developed. In the planning process, it is best to consult with stakeholders and build a plan together in an open-ended, cohesive team. This allows for an integrative process approach and focuses on a whole school or holistic design approach. Unlike a linear planning approach, holistic planning promotes synergies and allows for a better-organized sustainability plan. Stakeholder inclusion is essential in the planning process, especially in the early stages, as it allows project team members to collaboratively define the sustainability goals of the school.

Creating a plan is an integral part of creating a more sustainable school, however, the steps required to be taken at each school may be very different. Because of this, it is important to develop individualized plans catered to your school's specific needs for improvement. Attached below is a guide that can help educators in the planning process for developing a sustainable school. The plannerguide was inspired by the Guide for Sustainable Schools in Manitoba (Swayze, Buckler, & MacDiarmid, 2011).

PLANNER GUIDE:

Identify the Area for Improvement What needs to be changed to make a more sustainable school?	**Stakeholders** Who is involved in or affected by the issue?	**Goal** What do you hope to be the final outcome?	**Develop a Plan** How will you achieve the desired outcome?	**Signs of Progress** How will you know your plan is working?

PLANNER GUIDE EXAMPLE:

Identify the Area for Improvement What needs to be changed to make a more sustainable school?	**Stakeholders** Who is involved in or affected by the issue?	**Goal** What do you hope to be the final outcome?	**Develop a Plan** How will you achieve the desired outcome?	**Signs of Progress** How will you know your plan is working?
Large amounts of waste production	- Educators - Learners - School Facilitators	A reduction of waste production at the school by 40%	Encourage litter-less lunches among learners and educators. Encourage educators to switch to paperless lessons and activities.	Janitors are changing classroom garbage bins less often. The school is ordering supplies (like paper) less often.

3.0 Implementing Sustainability in the Classroom and Curriculum

Teaching the learners of the next generation is the foundation to making considerable changes in the future. This is why implementing sustainability into classrooms and curriculums is one of the most important steps when it comes to creating sustainable schools. Allowing learners to create links to sustainability in their daily lives is a crucial step in building understanding. Involving learners in the planning process for school sustainability can also be very beneficial as it develops problems solving skills and fosters innovations. There are many ways that sustainability can be encouraged in the classroom and curriculum and it begins with the content being taught in lessons. There are numerous resources that can help build understandings of sustainability and environmental science. A collection of resources that will be specifically focused on is GreenLearning.

3.1 About GreenLearning

"GreenLearning creates free education programs about energy, climate change and green economy that engage and empower students to create positive change for our evolving world". This is an amazing resource for many educators as it provides a database of many programs and challenges that can be done within the classroom to enhance the understanding of learners. Some programs and challenges that may be of particular interest in terms of sustainability are;

- Eco 360: Transitioning to a Circular Economy (Gr. 3-12) - This program explores a circular economy for plastics to address the current crisis of plastic pollution in the environment. By reimagining an economy free of plastic waste, learners must explore innovative solutions for reducing, reusing, and recycling plastic waste.
- Energy Revealed (Gr. 4-12) - This program teaches learners about energy management, encouraging sustainability through increasing energy efficiency.
- Climate Policy Quest (Gr. 9-12) - This program explores how policy is used to build a low carbon future. Climate Policy Quest empowers youth to become informed and active citizens for tackling climate change.
- Flood:ED (Gr. 3-12)- This program helps learners understand the impact of flooding and invites them to explore ways they can prepare against flooding at home and school. This program will help learners understand why sustainability is important and how it can help slow extreme weather events and prepare for them.
- Re-Energy (Gr. 4-12)- This science-based program will teach learners how to build a wind turbine, solar oven, hydroelectric generator, biogas generator, electric vehicles and energy storage technology models. The more technical approach of this program can inspire youth to innovate more energy-efficient or sustainable practices in the electrical generation field in the future.

- E-Cards (Gr. 4-12)- In this program learners create an info-packed eCard about an environmental issue and email it to leaders. Political policies are one of the best ways of creating substantial change in sustainability and this program helps learners become politically engaged.

Each of these programs are intended for different age groups, some of them providing resources for learners in grade 9-12 while others provide resources for a much larger age range spanning from grade 3-12. Resources on GreenLearning are not limited to what is mentioned in this guide, visit the GreenLearning website to browse more resources and find what most interests your learners.

3.2 Sustainability Guides forDifferent Grades

At each grade students are at a different level of understanding, which is why it is so important to explain sustainability in a manner that is conducive to the learners. Each age group also requires different activities and resources to encourage the understanding of sustainability and make the content more digestible. As previously mentioned the GreenLearning resources provide the same content for different age groups which can make the process of lesson planning much easier. That being said, creating new and innovative activities that can be done within the class and school is a great opportunity for educators. This provides more creative freedom and allows the development of more personalized education.

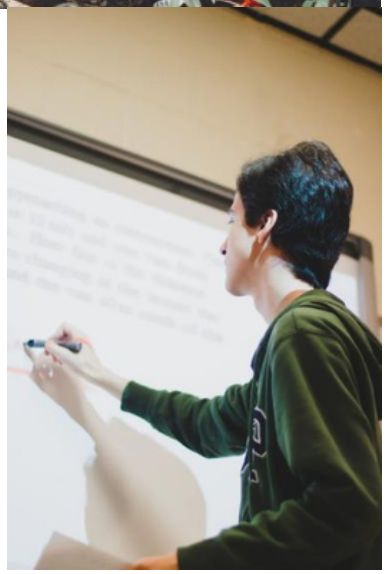
There are many topics that can be covered when discussing sustainability in the classroom. Listed below are topics that you can use for classroom discussion or lesson inspiration.

- Recycling - Recycling is an amazing gateway topic that limits the complexity that is associated with sustainability. Recycling allows students to begin to develop an understanding of the cyclical patterns of sustainability as well as the importance of reusing materials. Students can learn about recycling through building an understanding of which materials are recyclable and can go in the blue bin. This topic has so much potential and is very open to interpretation.
- Energy - Energy is an integral part of sustainability and often fits into the science curriculum of learners within this grade range. Learning about energy begins to tie in the discussion of carbon emissions and the role they play in sustainability. Students can develop their understanding of the topic by learning the differences between renewable and non-renewable sources. This can lead to discussions on why renewable sources are sustainable vs. why non-renewable sources are not sustainable. This will allow students to build a more rudimentary definition of the term sustainability and apply it more simply in an environmental context. Energy Revealed and Re-Energy are great resources to help the development of age-appropriate activities.

- The complexity of sustainability - Although this sustainability guide mainly concentrates on environmental sustainability, it is essential for students to understand that sustainability is so much more than just the environment. Encourage students to research the other aspects of sustainability and how it relates to specific issues and situations. This will allow learners to understand the intersectionality of the term as well as the fact that sustainability does not only focus on environmental betterment. For example, climate change is considered to be an environmental issue, however, what is often overlooked is the fact that animals and ecosystems are not the only things struggling as a result of climate change. The ongoing environmental degradation impacts many communities around the world through increases in hazardous weather and natural disasters resulting in numerous social impacts and economic impacts in the form of damaged infrastructure.

The topics listed are good starting points, however, some may seem too difficult for certain grades while others may seem too simple. Listed below are some simple activities that can be done for different grades to help teach an aspect of sustainability;

- Grades 1 - 3:
  - Making art out of recycled materials
  - Make and Remake Activity
  - Garbage, recycling and compost sorting activity
  - Nature walks
  - Butterfly habitat restoration or creation
- Grades 4 - 6:
  - Planting native plants or trees on the school premise
  - Creating miniature greenhouses to learn about the greenhouse effect and its impact on plants
  - Track the biodiversity of a local ecosystem
  - Speak for the Trees Activity
- Grades 7 - 9:
  - Build a Solar Oven Activity
  - Build a composter
  - Learn/innovate how to shrink your ecological footprint
  - Exploring EV Charging Stations in your Community Activity
  - Different Kinds of Plastics Activity
- Grades 10 - 12:
  - Conduct a personal sustainability analysis
  - What is your Plastic Consumption Footprint Activity
  - Discover community environmental issues and develop solutions
  - Create a climate change lesson plan for younger grades
  - Reimagining Economy Using Biomimicry Activity
  - Install Rain Barrels Activity



GreenLearning and Ausable Bayfield Conservation provide a very useful list of activities for each grade that were used for inspiration when creating this list. It is also important to note that although the activities are grouped in different grades, many of them can be altered and adapted for lower or higher grades. Consider looking through all the activities to see which ones appeal to you and your class interests the most.

4.0 Implementing Sustainability into the School

One of the most intimidating parts of the school sustainability process is bringing it out of the classroom and into the rest of the school. As previously mentioned, there are numerous stakeholders that take part in building the sustainability of a school. Because of this, it is important for each stakeholder to take part in the sustainability process. This portion of the guide will help explain how to get the stakeholders involved and excited for the future of sustainability at your school.

4.1 Getting the Principal Involved

The principal is the head of the school and controls a significant portion of sustainability potential. Oftentimes principals act as a common link between the other stakeholders and are a governing body that controls many aspects of the school. In order to bring sustainability to your school, it is essential to get the principal on board and use them as a resource to get other stakeholders on board as well. This should be one of the first stakeholders that are recruited as oftentimes they can make or break school-wide sustainability. One way to begin the process of principal involvement can be through a letter to inform the principal of your hopes and goals for the future of sustainability at your school. Some things that should be included in this letter are;

- Why sustainability is important/why you think it should be implemented in your school
- What role the principal will play in the process
- A brief description of some areas requiring improvement or ideas to enhance school sustainability

A sample letter is provided below that you could use for inspiration when writing your letter.

PRINCIPAL SAMPLE LETTER:

Dear (Principal) _____,

Sustainability has recently become a topic of increasing importance in many areas of the world. Numerous companies and schools have begun implementing sustainability into their daily practices, building maintenance, and social atmosphere. It is time for (school name) _____ to also take a step in the right direction and make sustainability a more integral part of this school's culture.

Building school sustainability is no easy feat which is why we need your help to take this movement from the classroom to the school as a whole. This process is very interconnected and contains many stakeholders such as; building facilitators (e.g. maintenance and janitors), sustainability coordinators, other staff and faculty, learners, and parents. In order to make large-scale change possible, we need you to act as the connection between all these stakeholders. One of the most important aspects of creating an effective sustainability guide is setting goals and creating plans together. This will allow for synergies to be created throughout the planning process and will ease the implementation process as well. With your support, we will be able to implement sustainability into our school seamlessly!

To be more specific, we would love your help in the following areas;

1. Identification for potential areas of improvement
2. Development of a school sustainability plan
3. Communication with stakeholders

Some issues that have noticed that could use improvement are;

1. (List potential issues to look into)
2. (List potential issues to look into)
3. (List potential issues to look into)

The role you play in this school and your inputs are invaluable to helping make (school name) _____ a more sustainable place. We need your help to teach the importance of sustainability to the next generations. If you have any questions please do not hesitate to ask.

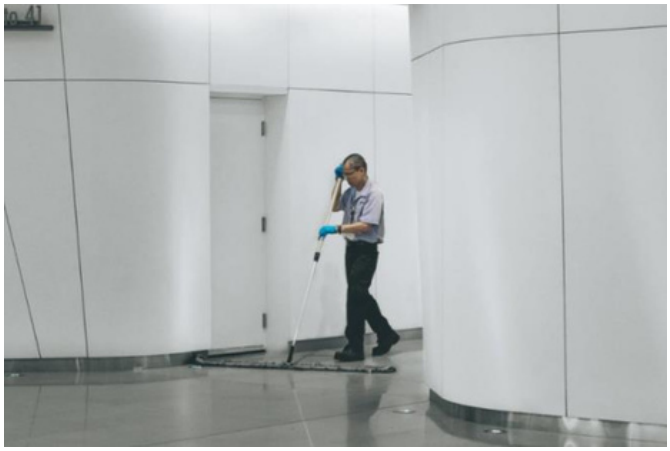
Thank you for considering this request.

Sincerely,

(your name)
Contact Information: _____

Once the principal is more involved in the project, they can play a larger role in the planning process and can aid in proposing new ideas and approving ideas faster. This will enable sustainability to take place in the whole school as opposed to just the classroom. Now that your sustainability planning team is growing, you can begin deciding on the overall vision you have for the school as well as some projects that you will prioritize. The principal can help determine what changes are more attainable and what changes require more time, energy and resources to complete. At this stage, the brainstorming process for the school sustainability plan can begin (see section 2.3 for more information on how to create a school sustainability plan)

4.2 Getting School Facilitators Involved



One of the largest factors that make a school unsustainable is its building operations. This is usually the area of the school that contributes the most to the carbon footprint through things like energy and water usage. The carbon footprint of a school refers to the total amount of greenhouse gases that are produced by the school and the people within it. Looking at an organization, building, or individual's carbon footprint is usually one of the easiest ways to determine how sustainable the entity is. However, it is important to note that carbon footprint should not be the only determining factor when looking at sustainability. That being said, it can act as a great tool to help decide on areas for sustainability improvement within the building. This is where school facilitators will play a major role in bettering the sustainability of the school.

Since school facilitators generally know the inner workings of the building they will act as very useful assets, especially in tasks like;

- Gathering information on gas and electricity usage (here is an Example Audit Report to get a better understanding of the specific questions you should ask)
- Gathering information on water usage
- Helping provide an understanding of what changes are safe and feasible
- Taking part in the planning process and brainstorming potential improvements that can decrease energy and water consumption, waste production, and greenhouse gas emissions.
- Gathering information to conduct a carbon footprint estimate.
- Access to emergency lighting and heating and cooling systems

Similar to the principal, a great way to get school facilitators involved can be through a letter (a sample letter for school facilitators is also provided below). However, if you already have the principal involved in the sustainability planning process they could also act as a great connection to get you personally in touch with school facilitators and let them know more about sustainability in the form of a meeting. Considering school facilitators are such a crucial part of school sustainability it is important to develop goals alongside them in order to ensure smooth implementation of sustainability measures. This will again allow for synergies between projects to be created, only furthering school sustainability.

In order to determine and create sustainability goals within the school building realm, it is important to understand what a sustainable building looks like. A great resource that is used for the international certification of sustainable buildings is LEED (Leadership in Energy and Environmental Design). This certification program started and run by the USGBC (United States Green Building Council) provides the framework for sustainable buildings. The USGBC also has a Canadian branch - the CAGBC. Although getting your school LEED-certified may not be as attainable, the program still serves as an exceptional resource to discover what steps can be taken to make the school more sustainable. LEED provides guidelines/credits in 9 categories including;

- Integrative Process
- Location and Transport
- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation
- Regional Priority (U.S. Green Building Council, 2019)

Looking into the guidelines within each of these categories can be really helpful in deciding what steps could be taken within the school to make it more sustainable. More information on the best practices of building sustainability can be found within section 5.3.

In the first 6 months of 2019 over 100 schools received their LEED certification (Keim, 2019). Here are some of the initiatives the schools took that made them more sustainable (all examples retrieved from (Keim, 2019));

- Springside Building at Common Ground High School - New Haven, Connecticut (LEED Gold): used large scale solar electricity, geothermal heating and cooling and daylighting (meaning they mostly used daylight as opposed to electricity to light their classrooms).
- Debeque PK-12 School - Debeque, Colorado (LEED Gold): offered the school as a facility for venues and community use. This is sustainable as it gives the property use when school is not in session, reducing the community's need for building other recreational buildings.
- Ben W. Murch Elementary School - Washington, D.C. (LEED Gold): has multiple outdoor classrooms, along with a pollinator garden, and even its own student-managed farm.
- Nelson Place Elementary School - Worcester, Massachusetts (LEED Silver): is lined with highly insulated windows and walls, resulting in heating and cooling energy savings. They also regularly monitor indoor air quality and use materials with high recycled contents.
- Frederick High School - Frederick, Maryland (LEED Silver): This school implemented many water conservation techniques like low-flow sinks and dual-flush toilets.
- West Salisbury Elementary - Salisbury, Maryland (LEED Gold): has minimal nighttime light pollutants, low energy consumption due to LED lights and study areas that are very conducive to learning due to their inviting design.

Some other green building certification organizations include;

- ENERGY STAR certification for commercial and institutional buildings in Canada
- Building Owners and Managers Association's Building Environmental Standards (BOMA BEST)

These act as useful guides that can be used alongside or independent from LEED in order to get inspiration for how to make a more sustainable building.

FACILITATOR SAMPLE LETTER:

Dear (School Facilitator) _____,

Sustainability has recently become a topic of increasing importance in many areas of the world. Numerous companies and schools have begun implementing sustainability into their daily practices, building maintenance, and social atmosphere. It is time for (school name) _____ to also take a step in the right direction and make sustainability a more integral part of this school's culture.

Building school sustainability is no easy feat which is why we need your help to take this movement from the classroom to the school as a whole. As a school facilitator, you have one of the most important roles when it comes to school sustainability. As you may know, running a building creates a lot of greenhouse gases, requires a lot of water, and creates a lot of waste. We need your help to devise and execute a plan for sustainability. With your support, we will be able to implement the changes into our school seamlessly!
To be more specific, we would love your help in the following areas;

1. Identification of potential areas of improvement. This step will be done together with the other stakeholders during the planning process.
2. The measurement of the current sustainability status of the school. This will be done by measuring water usage, electricity usage, waste production, etc.
3. Communicating findings to the stakeholders.
4. Implementing the changes that have been decided on.
5. Measuring the sustainability status of the school after changes have been implemented in order to determine progress. Again this will consist of the measurement of water usage, electricity usage, waste production, etc.

The role you play in this school and your inputs are invaluable to helping make (school name) _____ a more sustainable place. We need your help to teach the importance of sustainability to the next generations. If you have any questions please do not hesitate to ask.

Thank you for considering this request.

Sincerely,

(your name)
Contact Information: _____

4.3 Getting Staff and Educators Involved

Getting the staff and other educators involved is the next step of spreading sustainability throughout the school. The more people that teach about the topic and learn how to become more sustainable as individuals, the better! This will act as a domino effect through the learners and will help make sure that each classroom receives similar knowledge. However, this is not only about getting educators to teach more about sustainability and implement it into their curriculum, but it is also about making the classroom a more sustainable place. Although a majority of the building sustainability responsibilities fall on the school facilitators, since educators and learners are the main occupants of the building there are many ways they can take action in the school. Some small things that could be done within the classroom is;

- Having a G.O.O.S. (Good On One Side) bin where learners can get papers that are used on one side and utilize them as scrap paper, crafts, etc. (Ecoschools Canada, n.d.)
- Using/re-using sustainable classroom decoration
- Reducing the number of paper handouts
- Trying and take lessons outside (outdoor classrooms reduce energy usage)
- Keeping the lights off and windows open if possible
- Using sustainable resources/ reduce overconsumption of class supplies
- Have recycling charts to ensure students know how to properly dispose of their waste
- Question/contest non eco friendly school policies that have environmentally friendly alternatives (for example Chris Hadfield Public School contacted their school board and addressed a new safety protocol that was wasting energy. They shared their opinions about a lighting policy that required all the school lights to be turned on before school, and got the policy changed to no longer require that.)

Figure 3: G.O.O.S. Bin (retrieved from https://ecoschools.ca/2015/05/01/goos-bins/)

Along with these simple steps to make the classroom more sustainable, it should also be encouraged that educators discuss sustainability more in their classes and intertwine it in their curriculums. The suggestions presented in section 3 could also be shared with other teachers to inspire more sustainability discussions and activities in their classrooms. This information can reach staff and educators through meetings and emails; however, informational webinars and workshops should also be considered as an option when spreading the word of sustainability.

Staff and educators can also contribute to sustainability as individuals through their personal daily choices. Encouraging the employees within the school to follow a sustainable personal lifestyle can help spread the word of sustainability outside of the school and into other areas of life. Some personal choices that contribute to sustainability include;

- Purchasing ethically sourced products (conflict-free, fair trade, and many more certifications)
- Follow more sustainable diets (reduce meat consumption - ex. meatless Mondays)
- Reduce unnecessary consumption and waste
- Shop locally
- Look into energy-efficient goods when they are in need of replacement (Energy Star appliances)
- Carpool to work or other destinations

Although not all these changes are accessible to everyone, even the smallest changes make a difference and leading by example is one of the best ways to encourage others to follow along.

4.4 Getting Parents/Guardians Involved

Similar to the previous stakeholders, principals act as the best gateway to reach out to parents on a larger, school-wide scale. This outreach to parents/guardians can most simply be done through email newsletters. This can provide concise information and updates on what is happening in the school and can also be used to encourage more sustainable practices at home. What is done within the homes of students can have a large impact on how sustainable a school is as the actions of the people within the school are also taken into consideration when measuring sustainability. For example, if parents pack lunch boxes with large amounts of waste (ie. single use plastic wrappers, snacks with excessive packaging, etc.), the school will be less sustainable as it will be receiving more waste. Another thing that is taken into consideration when measuring sustainability is transportation to and from the school. Parents/guardians are often in control of how learners get to their learning establishment, the more sustainable modes of transport are via bus, walking or biking. If these options are not feasible, carpooling can act as an alternative. Petitioning or writing to local authorities to provide school bus services can also help increase sustainable modes of transport to school. Informing parents that they should encourage their children to take these modes of transport to school will be greatly beneficial in reducing the school's carbon footprint and overall reducing carbon emissions.

It is important to keep parents/guardians aware of what is happening in the school and encourage them to take part. Some sustainable practices/activities that parents could be made aware of and encouraged to participate in include;

- Meatless Monday (try following a vegetarian diet one day a week to reduce your dietary carbon footprint)
- Walk or bike to school (try non-carbon emitting methods of transport to get to and from school)
- Wasteless lunches (try packing zero waste lunches, consider using containers instead of single-use plastic)
- Use reusable water bottles (reusable water bottles can be easily refilled at water fountains and are much more sustainable than plastic bottles)

Parent/guardians can also be helpful resources in the planning process as they are community members and can provide insight on pressing environmental issues within the area. Eager parents/guardians may have helpful sustainability suggestions and may want to play a larger role in the school's sustainability goals. Keeping an open path of communication will be helpful in planning and spreading sustainability beyond the school.

4.5 Getting Learners Involved

Getting learners excited about sustainability and joining the movement to a greener future is extremely important as this is the group where the most potential lies. Learners often have amazing ideas for sustainability and are eager to make the changes necessary for the benefit of their future. Getting learners involved goes far beyond just implementing sustainability in the curriculum, there are a variety of ways to spark interest in the hearts and minds of learners including;

- Clubs: Eco-club, green club, or environmental club can begin being offered at the school to help build an interest in the environment. Although there are many different names that can be chosen for these groups, they generally involve similar activities and information. What is good about clubs is that oftentimes there are learners that want to take the initiative to run the clubs which can relieve a lot of responsibility from teachers. In scenarios where learners do not want to take the lead or just need some help brainstorming, some great activities to conduct within clubs are;
    - Outdoor schoolyard/playground clean up (collect garbage that has been littered on school grounds or in the near community)
    - Creating or tending to a school garden (learners can plant and grow their own fruits or vegetables)
    - Planting native species in school flower beds
    - Running campaigns to solve local environmental issues
    - Promote and run environmental events for the rest of the school. For example, the University of Toronto - Mississauga holds a sustainability week each year where they promote sustainability by holding an environmental event every day of the week. Some of these events include; Meatless Monday, Trashless Tuesday, Wellness Wednesday, Tech Thursday, and Future Friday. All of these events promoted sustainability in different ways and consisted of sub-events that relate to the day. For instance, on Trashless Tuesdays, the school hosts a “trashon show” where learners make clothing out of “trash”. This week is full of informational webinar sessions, fun activities, and games that learners can take part in to further their understanding of sustainability and make a difference in their own lives. If running environmental events is not as accessible, learners can just promote existing environmental events like Earth Day.

There are so many fun activities that can be done within eco clubs that can spark a passion for environmental protection. Inspiration for other activities can be found all over the internet as well as within the club itself through learner suggestions.

- Challenges: any form of competition is a great way to catch the attention of learners and get them in the mood for education. GreenLearning provides a number of Canada-wide challenges that can be entered as a class. These challenges are especially appealing as they provide an easy-to-follow outline which can make it much less intimidating to some educators. Another perk of these challenges is they allow learners the opportunity to innovate and potentially win cash prizes for their school. Visit the GreenLearning challenges page to learn more about what challenges are offered. If the larger-scale challenges are too daunting, smaller-scale, school-wide or class-wide challenges are also an effective option for getting learners involved. A potential challenge could be for each class to attempt to come up with a sustainable solution to an issue within the school or community. This again encourages learners to be innovative and allows them to understand how sustainability directly impacts their lives. For instance, the students at Eastwood Collegiate Institute participated in an inter school competition in which schools earned points throughout a variety of daily challenges including Meatless Monday, Take-A-Walk Tuesday, Wasteless Wednesday, Thermostat Thursday, and Filter Friday. The healthy competition energized students to take greater action within their schools and homes.
- Posters: Posters are great options to serve as reminders for small sustainable practices that learners should continue to implement in their life. For example, posters near light switches that remind people to turn off the lights, or posters near garbage, recycling, and compost bins that remind people where their waste is supposed to go. There can also be posters for other environmental-related events as well as for the promotion of environmental clubs. Posters can act as a great creative outlet for learners interested in art, which will, as a by-product, bring more learners to be interested in environmental issues and clubs.
- Field trips: Field trips are an effective way of showing learners why fighting for environmental and sustainable causes is so important. Bringing groups of learners to simple field trips to experience the outdoors and be in nature will help them develop a connection to the environment and want to protect it more. Local parks, farms, botanical gardens, conservation sites and much more are great opportunities for learners to experience nature and want to be involved in the school sustainability project. That being said, sustainability is not just lush gardens and grass, some other field trips that could be more educational include; local wastewater management facilities, dumps, or electricity production sites. There is also an option for virtual field trips in scenarios where learners are in the online environment or field trips are not as accessible. Some great virtual field trip resources include; Discovery Education Virtual Field Trips, North American Association for Environmental Education Virtual Field Trips

- Outdoor activities: Similar to field trips, outdoor activities will also help build the connection with nature, at no cost this time. Simply taking learners outside for the last 15 minutes of class, or just taking the lesson outdoors altogether, will aid in building their willingness to be outdoors. This will again create the desire to be more involved in the school sustainability project.

Allowing learners the opportunity to get more involved in sustainability outside of the classroom will help build the foundation for a more long-term interest in the subject.

4.6 Getting Sustainability Coordinators Involved

Some school boards have sustainability coordinators, which is helpful as it means there will be someone on the board level that you can reach out to and will likely support your efforts. Sometimes sustainability coordinators go under different employment titles such as "energy managers", however, they can generally be found within most school boards by looking up "(your school boards) sustainability". Principals can also be useful in this situation and can help you find the sustainability coordinator of your school district.

The role of sustainability coordinators within the school district is to support the environmental initiatives of the school district as well as individual schools. They will act as great resources for determining attainable goals and have much experience meaning they could also provide useful suggestions for potential goals. Overall, sustainability coordinators act as extremely useful resources and can be a great help during the entire process of developing a more sustainable school. Try to reach out to your sustainability coordinator for advice and guidance, they can take part in the planning process and relieve some of the pressure that may come with it.

This resource may not be the most accessible at all school boards so it is important to know that this is not a necessary part of bringing sustainability to your school. There are plenty of other teacher led resources that can also be of great help when trying to make your school a more sustainable place. This includes programs like EcoSchools (see section 5.1 for more information).

5.0 Best Practices

The last section of this sustainability guide will consist of some of the best practices of sustainability. These best practices will hopefully inspire and encourage the implementation of more sustainability within your school. They may also act as ideas for what could be implemented or they can be altered to better fit your school's needs and abilities.

5.1 EcoSchools Canada

EcoSchools Canada is a certification program that aims to "nurture student leaders, reduce the environmental impact of schools, and build sustainable school communities'' (EcoSchools Canada, n.d.). When schools participate in this program it allows them to get a better understanding of the environmental practices they currently take part in as well as the changes they could make to reduce their environmental footprint. To attain this certification schools must apply and complete certain environmental actions, campaigns and projects to earn points which will be assessed at the end of the year to determine an environmental certification rating that the school can receive. This program can act as a toolbox of resources and guides on how to make your school more sustainable. It can be used alongside this guide to help connect the planning process to more explicit guidelines and steps toward sustainability. The certification is also free, making it a very useful and accessible resource. The organization acts as a helpful contact, especially for school boards without sustainability coordinators, and can really aid in getting the ball rolling for sustainability projects.

5.2 LEED certification

As previously mentioned, LEED is a great resource for sustainability, especially when looking at the buildings and infrastructure of the school. This is generally where a bulk of sustainability changes need to be made as building operations usually act as the greatest contributors to greenhouse gases and overall lack of sustainability. To better understand LEED it is important to take a more in-depth look at the sustainability guidelines of LEED (U.S. Green Building Council, 2019);

Figure4:retrievedfrom(U.S.GreenBuildingCouncil,2019)

- Integrative Process: This is worth 1 credit in the LEED evaluation and it only entails that stakeholders work together to develop synergies during the planning process of developing a LEED building. This step emphasizes the importance of collaboration which is also greatly applicable to the sustainable school plans as teamwork is also an essential step.
- Location and Transport: This section is concerned with where the building is built and how people go to and from the building. Since this sustainability guide is likely being used for a school that is already built, the location-focused credits are not of much concern, however, the transportation still is. This section greatly encourages public transport, or in the case of school, it encourages walking, biking and bussing. This could be done by providing adequate biking facilities like bike racks. It also suggests the reduction of parking footprints as the large areas of impermeable ground that parking lots disrupt hydrological cycles.
- Sustainable Sites: This section focuses on preventing pollution during the construction process, environmental site assessments, habitat protection/restoration, rainwater management, maximizing open space, heat island reduction, and light pollution reduction. Some of these goals can be achieved in a school setting like rainwater management (school can collect rainwater and use it to water plants), light pollution (reducing nighttime lighting while maintaining safety), and maximizing open space (providing large unobstructed schoolyards for learners).
- Water Efficiency: This section focuses on outdoor water use reduction, indoor water use reduction, and building-level water metering. Reducing outdoor water use may be achieved in a school setting through the planting of native plants to stop irrigation demands and increase mulching. Reducing indoor water use can be achieved through installing more efficient plumbing or using non-potable water for toilets and urinals. Water metering should be conducted to measure progress throughout the process and can be done by building facilitators
- Energy and Atmosphere: This section focuses on optimizing energy performance, energy metering, renewable energy production, and carbon offsets. Energy efficiency can be achieved using more energy-efficient products like energy star appliances or LED lightbulbs. Energy savings can also be enhanced through building design, this includes designing buildings to optimize on daylighting and insulation. Schools are also encouraged to produce their own renewable energy through solar panels or wind turbines, which although are expensive, do provide long-term savings.

- Materials and Resources: This section focuses on storage and collection of recyclables, waste management, product life cycles and sourcing of raw materials. Some goals can be achieved by ensuring most products purchased for the school are sustainably sourced and that waste is properly disposed of/ discourages the production of waste.
- Indoor Environmental Quality: This section is quite social-based and attempts to make the building enjoyable for the people within it. The goals include enhanced indoor air quality, thermal quality, interior lighting, daylight, quality views, and acoustic performance. Some of these goals can be reached by making sure windows can be opened to allow air circulation, planting more outdoor greenery to provide a better view, providing ergonomic seating and tools, keeping temperatures comfortable and steady as well as providing light that does not strain eyes.
- Innovation: This section focuses on encouraging innovation during the planning and implementation process. Innovation allows new knowledge to be spread and can make sustainability easier for you and others. Creating a new way to practice sustainability will always be helpful.

Although getting LEED certification comes with a significant price tag and requires a lot of time and effort, the LEED efforts can still be applied to your school without receiving the certification. The main goal of this section is to provide inspiration for the steps that can be taken to make the building more sustainable.

5.3 Sustainable Development Goals

The sustainable development goals (or SDG's) are a list of United Nations created goals that aim for the final outcome of work sustainability. The SDGs are much more large-scale and also consider the other factors of sustainability, not just the environmental. The sustainability goals are (United Nations, 2015);

1. No Poverty: End poverty in all its forms everywhere
2. Zero Hunger: End hunger, achieve food security and improved nutrition and promote sustainable agriculture
3. Good Health and Well-Being: Ensure healthy lives and promote well-being for all at all ages
4. Quality Education: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
5. Gender Equality: Achieve gender equality and empower all women and girls
6. Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all
7. Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable and modern energy for all
8. Decent Work and Economic Growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Figure 5: Retrieved from https://www.un.org/development/desa/dspd/2030agenda-sdgs.html

9. Industry, Innovation, and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10. Reduced Inequalities: Reduce inequality within and among countries
11. Sustainable Cities and Communities: Make cities and human settlements inclusive, safe, resilient and sustainable
12. Responsible Consumption and Production: Ensure sustainable consumption and production patterns
13. Climate Action: Take urgent action to combat climate change and its impacts
14. Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15. Life on Land: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16. Peace, Justice, and Strong Institutions: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17. Partnership for Goals: Strengthen the means of implementation and revitalize the global partnership for sustainable development

Although these goals are on an international scale it is important for learners to be aware of what the SDGs are as well as the section of sustainability they fall under (environmental, social, economic, or political). An interesting activity to do with learners is to have them characterize the sustainability goals under the respective sustainability branches. There will likely be overlap in the sustainability goals, but that is ok, sustainability is about interconnectedness. The Sustainable Development Goals Tracker can also act as a useful resource when creating activities around the topic. This resource provides extensive research on the current state of the SDG as well as the progress that has occurred within recent years, regarding each goal.

5.4 BullfrogPower and Indigenous Clean Energy

Bullfrog Power is a Canadian green energy retailer that offers its customers electricity entirely from renewable energy sources like hydroelectricity, wind, natural gas, and more. Although this is an amazing service to subscribe to, it can be more expensive than other competitors in the area. This is a great option for schools that cannot reduce their electricity usage, but still want to reduce their carbon footprint through the electricity they consume.

Another leader in sustainable energy within Canada is Indigenous Clean Energy. Indigenous Clean Energy is a not-for-profit organization that focuses on the Indigenous inclusion within Canada's sustainable energy future. It has the main goal of encouraging Indigenous people's presence in the transition to a clean energy future. This will be achieved through "Indigenous leadership, and broad-based collaboration with energy companies, utilities, governments, development firms, cleantech innovators, academic sector, and capital markets" (Indigenous Clean Energy, n.d.). This resource is essential in recognizing the important role Indigenous peoples play in sustainable development.

5.5 Real-life Examples of Teachers Doing Sustainability Work in the Classroom

Teachers all around Canada and the world are taking sustainability more seriously and there are numerous examples of their exceptional actions towards bettering their school. As previously mentioned, the GreenLearning challenges provide a fun pathway for sustainability to enter the curriculum. Listed below are some of the submissions for the challenges to show how innovation flourishes in learners.

- Queen Margaret's School - Duncan, British Columbia (Climate Policy Quest): Although the entire class participated in this challenge, this innovative carbon reduction plan was presented by one student, Katia. Katia created a scalable Restorative Community Development Policy to ensure sustainable urban development. Acknowledging the importance of collaboration, integration and intersectionality in mitigating the impacts of climate change, her innovative policy proposes solutions for carbon sequestration and emission reductions in communities and municipalities with a two-pronged approach. This clearly shows the willingness of learners to take part in the sustainability planning process, they are just waiting for the challenge.
- Hampton High School, Hampton - New Brunswick (Flood:Ed): This class built a pollinator garden bed and installed a rain barrel to collect water from the greenhouse. There is now an

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successful outcome.

Overall, these few examples of sustainability in action through the GreenLearning challenges should hopefully inspire you to take action within your school and try to incite substantial change. For more great examples of all of the challenge submissions visit GreenLearning Showcase Page.

6.0 Conclusion

The main goal of this sustainability guide is to make sustainability a more integral part of education and you can help make the goal a reality. Spreading the word to the younger generations and developing the value within the school is such an important part of making sustainability part of Canadian culture. Although some changes may seem small, they act as the first domino and can cause a ripple effect to the rest of the school, and community. Thank you for taking the first step by reading this sustainability guide, hopefully it will be of use in your sustainability journey.

6.1 SupplementaryReadings/Resources

When bringing sustainability to your school it is important to go over a number of resources in order to have a good understanding of the bank of knowledge regarding sustainability. Some useful resources that were used as inspiration when creating this sustainability guide include;

- Guide for Sustainable Schools in Manitoba
- Sustainable Schools Best Practices Guide - British Columbia Ministry of Education
- Green Schools Resource Guide
- The Sustainable Development Goals - A Guide for Teachers
- Environmental Education, Scope and Sequence of Expectations (2017 Edition) - The Ontario Curriculum
- LEED Reference Guide

6.2 Contacting

Reading over this content can help make the shift to a sustainable school easier and also provides numerous suggestions that can aid in the sustainability process.

If you have any questions regarding the sustainability guide or other GreenLearning resources,please contact us via email: programs@greenlearning.ca

6.3 References

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