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Best Practices: Teaching about Food, Agriculture & Environment

This guide is intended for use by elementary and secondary educators. It provides an introduction and overview of three effective ways to teach about food, agriculture and the environment in an experiential manner.

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Why Teach about Food, Agriculture & Environment?

The world is facing a variety of important and impending challenges. Population and climate change are topics which have become prominent in the media. There will continue to be more and more people who need to live off the same amount of natural resources.

In response to some of the challenges facing our planet, there have been some moves towards education for sustainable development. Several organizations and programs have been developed to showcase the severity of the problems and to attempt to teach our present and future generations to live in a more sustainable relationship with the world.

The topics of food and the environment have each received their fair share of the spotlight. The Ontario Ministry of Education recognizes the importance

of teaching students about the natural world (2011). As well, epidemics such as childhood obesity have forced a closer examination of food, and resulted in policies which bring healthy food into both the minds and bodies of young people (CSC, 2011). However, agricul-



ture is often left out of the picture. In addition, these topics can sometimes be taught in isolation, as opposed to focusing on the important connections which exist between them to sustain the planet.

So why is it important to

teach about Food, Agriculture and the Environment? There are three important reasons:

1) Knowledge about these topics is low.

Studies in several countries have shown that young people have poor understanding of food and farming related topics (Dillon et al, 2011).

2) Connections between these topics are important

Agriculture needs the environment to produce food—and we all need food to survive. Therefore, it is necessary for us to treat the environment with respect so that the cycle is secure.

3) Knowledge can help to inform decisions/actions

If individuals are more aware of the connections between FAE, they may be more likely to engage in behaviours which help to sustain the planet.

Best Practices in Experiential Education

Experiential education has been the traditional way to teach about food, agriculture and the environment. In the past, these topics were taught through hands on activities in everyday schedules. For example, children would have been exposed to the process of growing and producing food through interactions at their family farm or in their backyard garden. However, now only 2% of Canadians live on a farm (Statistics Canada, 2008).

Therefore there is a need for more structured experiential activities to facilitate this understanding .

If such activities are needed, it is important to ensure that the most effective methods are used. This is the reasoning behind the creation of this Best Practices guide.

The Best Practices for teaching FAE have been established through a careful review of a selection of research articles and

program descriptions. Each of the three methods have been chosen for their success at promoting understanding of FAE, as well as considerable other benefits such as improved health and nutrition and increased community engagement. It is intended that this guide will provide useful ways for teaching about FAE, and in turn prepare future generations to live sustainably with the earth.

School Gardens: Growing and Preparing Food



Students who garden tend to eat more fruits and vegetables

“When one gardens, food can no longer be viewed as a mere commodity for consumption.”
(Thorp, 2006, pp 146)

Students are proud of what they grow in a garden, and eager to share the bounty.



While the use of school gardens has been around for a very long time, the use of them as a teaching strategy has gained significant popularity in the past few decades. There are a variety of forms a school garden can take, ranging from containers to large plots of land. No matter what the size of the school garden is, there are an amazing number of ways that they can be used to teach about the relationships between food, agriculture and the environment.

In terms of an experiential teaching strategy to showcase the relationship between the environment, agriculture and food, gardens are hard to top. They provide a hands on way to witness how natural resources, coupled with hard work can yield delicious and nutritious food for consumption. Given the modern day conveniences of ready-made meals and fast-food outlets, as well as the increasingly urbanized population, direct connection with the land is rare among today's children and youth.

School gardens also represent an excellent method for introducing food preparation and cooking into educational lessons. Utilizing food which is grown in a school garden illustrates a full food cycle approach for students. The growing of the food one eats creates an important lesson around the value of that which sustains us. As Thorp says, “when one gardens, food can no longer be viewed as a mere commodity for consumption” (2006, p 146). Gardening helps to illustrate the connections between FAE.

Benefits

There are several amazing benefits that have been documented as a result of school gardening initiatives. Below are some of the most well known and supported:

Community Involvement

School gardens provide ample opportunities for students to interact with members of the community at large. Thorp (2006) found that students who were gardening tended to share the produce with their families. As well, gardening creates opportunities to involve community organizations (seniors residences, businesses, etc) in both everyday activities and in special events.

Academic Benefits

Several studies have found that students who engage in gardening display higher academic performance on standardized tests and in science than their non-gardening counterparts (Blair, 2009). As well, gardening increases enthusiasm for learning, and agricultural literacy among participants (Faddegon, 2005).

Health and Nutrition

Students who are engaged in gardening can experience improvements to their nutrition. For instance, Blair (2009) found that students who garden prefer more vegetable types, increase their consumption of fruits and vegetables and are more likely to try new kinds of food.

Values of Stewardship

Gardening allows students to develop a relationship with the earth. Often they are excited to engage in activities which improve the soil fertility and water quality, and look for ways to nurture the environment

Challenges

School Gardens have some aspects which can make them challenging to implement as a teaching strategy:

Maintenance and Upkeep

Gardens require a lot of work to maintain. Both Thorp (2006) and Blair (2009) suggest that groups of dedicated volunteers be established to encourage the garden to flourish to its full capacity.

Teacher Knowledge and Skill

Teachers can experience difficulty maintaining a garden without adequate practice and understanding of life systems. Hence it is necessary for more education and development for teachers in this area. The Additional Resources on this page offer a good starting point for increasing knowledge and skills for gardening.

Best Practice Suggestions

- **Let learning emerge from the experience**

If students are allowed to explore and engage with the natural environment their inquisitive minds will find learning opportunities. Follow the lead of your students and make the most of teachable moments.

- **Incorporate food preparation**

In order to get the most out of the gardening experience, allow students to use food they have grown to prepare food for consumption. Food preparation can lead to discussions about nutrition, food safety and socio-cultural topics.

- **Use whatever space fits the situation**

A garden does not have to be a large outdoor area. Use whatever space is available and suitable in your school's surroundings. Container and raised bed gardens can be very effective for growing tomatoes, leafy greens and herbs.

- **Get assistance**

As the research suggests, gardens are most often successful when they are organized and maintained by a team. Contact local horticultural groups, or ask parent volunteers for assistance with the garden. Create partnerships with summer camps or 4-H clubs to keep children involved in summer months.

- **If at first you don't succeed...**

Gardening, like agriculture is dependent on the weather, and faces stresses from pests and disease. Thus, there may be things that do not go according to plan. However, it leads to learning opportunities and discussions with students about how the environment, food and agriculture are all connected.



Activity Ideas

- Have students design the layout of their garden, including the dimensions of it, number of rows of vegetables, etc. They can research to determine what type of soil and sun/water each of the various plant species does best in.
- Plant some traditional field crops in the garden (corn, soybeans, wheat). At harvest time discuss what the various uses are for those crops (animal feed, flour, bio-products, etc).
- Harvest produce from the garden and sell to students' families or local residents. Discuss the various ways that we access and purchase food. Have students speculate why some food products are more expensive than others.
- Experiment by withholding water from certain plants, shading some from the sun, or adding a fertilizer to certain patches of soil. Monitor how each plant does under various circumstances. Discuss how plants need the environment to thrive.
- Hold a harvest party with the students using the produce grown from the garden. Talk about the importance of food in various holiday celebrations. How are those types of food produced?

Useful Resources

- Evergreen Foundation <http://www.evergreen.ca/en/resources/schools/index.sn>
- Nutrients for Life <http://www.nutrientsforlife.ca/en/projects/>
- School Gardens <http://aggie-horticulture.tamu.edu/kindergarden/child/school/sgintro.htm>
- Thorp, L.(2006). *The Pull of the Earth: Participatory Ethnography in the School Garden*. Lanham: AltaMira Press.
- Center for Ecoliteracy: Rethinking School Lunch <http://www.ecoliteracy.org/>
- School Garden Weekly <http://schoolgardenweekly.com/school-garden-news/school-garden-news-canada-2>
- Making it Happen: Healthy Eating at School <http://healthyeatingatschool.ca/in-the-garden>

Place Based Inquiry



Place based education is directly aligned with the theory of experiential education. Many theorists and scholars recognize that there are benefits to having students engage in real experiences and participating in activities of an outdoor nature. Sobel (2004) posits that by providing opportunities for students to engage with the places around them, a sense of understanding and responsibility is

established which results in more active and caring citizens. Such experiences provide the opportunity for participants to solve local environmental issues and to engage in behavior which can improve the health and sustainability of the FAE dynamic around them.

This learning strategy delves into the questions about what is in a place, why, and what influences there are on how that place functions in

tandem with other places. It provides an opportunity to deeply engage with the spaces that surround students' homes and school. Participants learn to view and assess the places around them in a more systematic and comprehensive way.

When considering the agri-food system, this connection between people and place is fundamental, thus this pedagogical strategy is useful for exploring the topics of FAE.

By providing opportunities for students to engage with the places around them, a sense of understanding and responsibility is established.
(Sobel, 2004)

Benefits

Academic Achievement

Results of various studies have shown that students who are taught using place based inquiry methods outperform their peers in math and science (PEEC, 2010). When learning takes place in an active and 'life' relevant manner students find it easier to connect with and understand topics.

Stewardship Values

When students are given the chance to interact with the places around them they develop close connections with the natural relationships which exist in those spaces. This can lead to a desire to preserve and improve the place they are engaging with, and others. Thus, place based inquiry can promote stewardship values.

Community Involvement

Place based inquiry can be used to address problems which are faced by communities. Hence, students can be encouraged to not only investigate the unique characteristics of their place, but they can also become resources for their communities and draw on the people in their community who can work with them.

Challenges

Location

One of the biggest challenges in implementing place based education is finding a place which adequately illustrates the relationship between FAE. In a constructed environment these relationships can be more difficult to illustrate. However, they do offer opportunities to discuss how constructed environments are where most individuals access

their food, and lead to discussions about where food is produced and what is needed to produce it.

Bureaucratic constraints

Many teachers face constraints such as cost and liability. Place based education can require cost to take children to certain places and liability may be a concern depending on the area of study.

Teacher knowledge & skill

Many educators lack experience in the implementation of place based education. They require inspiration as to how to use a place to explore concepts of FAE with students. Therefore suggestions such as those on the next page and resources listed can assist in familiarizing educators with this pedagogical technique and how it can be used.



Liability is a constraint faced by many teachers trying to use place based inquiry

Best Practice Suggestions



change, the connections can be made to how our food is produced and why the environment must be preserved.

Examine Place Through Multiple Lenses

- When utilizing place based inquiry it is beneficial to look at the place through a variety of lenses. For example, students can look at place through a geographic, economic, biological, etc lens. This can help students to realize that the components of FAE are interconnected and linked to many different aspects of life around them. Educators can also appreciate looking at place through different lenses because these topics usually align with tradi-

tional curricular subjects which makes it easy to assess and report on student achievement.

Use the Seasons

- Another lens that can be used to examine places through is the lens of the seasons. Weber (2004) has found that observing a place across seasons can create unique opportunities to become familiar with the flora and fauna of the local environment. The seasons can also be a powerful example for students that plants can not be grown outdoors year round in some climates. This illustrates a clear connection between environment, agriculture and food.

Ease in to Place Based Inquiry

- Due to challenges such as cost, liability and location, place based education is something that should be utilized on a step by step basis. Researchers have found that individuals who have prior experience with outdoor and place based environments are more likely to respond positively to subsequent experiences. Consequently educators should offer short term and simple place based activities for students when they first explore the use of place based education. They should also scaffold experi-

Utilize Popular Topics

- Popular topics can be used as a lens to examine places and engage in inquiry which examines FAE relationships. For example the topic of local food is currently very popular and can lead to discussions and activities about agricultural practices, food miles, economic impact of food choices, etc. Another popular topic is the environment. By using the environment and pressing topics such as climate

Activity Ideas

- Take a community inventory around the school. Identify an FAE issue which needs to be resolved. Have students work to create a plan which improves the sustainability of the community and/or resolves the issue.
- Examine a place close to the school such as a park (or on the school grounds, a flower bed). Examine the soil, and consider what can be grown or produced in that soil. Have students consider: Why is it important to have healthy soil which can produce food? What will happen if more and more soil is paved over and has buildings put on top of it? Explore various urban and rural areas to record the different contexts of the places.
- Using archival information, research what the grounds of the school, or other community areas looked like 10 years, 20 years, 100 years ago. If it has changed, how? Is this change good or bad? What influence has such change had on the local relationship between food, agriculture and the environment?

Useful Resources

- The Foxfire Fund Inc. <http://www.foxfire.org/teaching.html>
- Littledyke, M., Taylor, N., and Eames, C. (2009). *Education for Sustainability in the Primary Curriculum: A guide for teachers*. South Yarra: Palgrave Macmillan.
- Place Based Education Evaluation Collaborative <http://www.peecworks.org/index>
- Promise of Place <http://www.promiseofplace.org/>

Reflective Mediums



Students can use video, photography or art to capture the processes which occur to create food from the natural resources around us.

Use of media can increase both knowledge and attitudes about conservation topics (Pearson et al., 2011)

Reflective mediums consist of a variety of artistic methodologies which can be used to examine the relationships between FAE. Examples of reflective mediums include photography, journaling, painting, poetry, video, etc. These methods are still an experiential way to engage students in the examination of FAE. One of the most exciting and useful elements of this strategy is that reflective mediums can easily be paired with other strategies such as gar-

dening or place based inquiry. In fact, many researchers and programs utilize these techniques to encourage students to engage with the topics of FAE.

As the name suggests, reflective mediums are an important element of the experiential learning cycle. Reflection through the use of art or language can help to solidify learning for an individual after it has happened. This provides an opportunity for learning to become more ingrained, as

well as offers a chance for behaviours and values to be reassessed.

These mediums also present a unique way to share information with other groups of people. Photos, journals and videos can be used to increase awareness of FAE among various populations, or even incite action for a variety of issues and incentives. Most importantly they offer an opportunity for self expression and a chance for students to explore how they feel about the world around them.

Benefits

Conservation attitudes

- Research has determined that the use of visual media can increase both knowledge and attitudes about conservation topics (Pearson et al., 2011). This is important and indicates that videos may be an important preliminary step for educators to use prior to having students engage in place

based education or community projects.

Environmental Stewardship

- Reflective mediums can also encourage students to move beyond beliefs and values towards action. Information which is recorded through reflective mediums can be shared with citizen science initiatives that allow young people to participate in important re-

search and action to preserve FAE communities.

Engagement and empowerment

- Students provided with the chance to use their reflective medium to illustrate an issue can feel a sense of empowerment or pride. This is especially true when they investigate a local issue and become valuable resources on the subject.

Challenges

Emotional responses

Using reflective medium can be a double edged sword. Videos and photos may bring out emotional responses to certain topics which may be difficult to deal with (e.g. pollution, endangered species, etc). However it can also be a

creative way for students to express and unpack their feelings in a safe way (reflective journals).

Cost

Art supplies, film and photography equipment and developing can be expensive. This can hinder some individuals' participation in such initiatives. However, there are many grant programs to apply to and

some businesses may offer donations or complementary service. Alternatively, journals are a very inexpensive medium.

Teacher Training

Educators may lack the skills and training to properly utilize video or camera equipment, or explore the topics captured by student activities.



Journaling is an effective way to encourage reflection about experiences with FAE relationships

Best Practice Strategies

Photovoice with a purpose

- An activity which has received a lot of attention in the media is photovoice. Photovoice encourages participants to photograph issues that they feel are pertinent to them and which they would like to see changed. These create a dialogue from which to explore potential modes of action which students can take to improve the situation. This is especially relevant for students to use with FAE, because it can help them to illustrate to others the relationships between FAE in locally relevant situations.

It is suggested through

the literature and various programs that the best way to implement photovoice is to train students on medium of photography, and to give them an area of focus to capture (e.g. things within the community which are bad for people's and the planet's health). This helps to provide a direction to students and minimizes the wasting of time or effort with equipment.

Discuss topics

- Ensure that when students have engaged in reflective medium that they are allowed the opportunity to share with others. This can help to de-brief on sensitive issues and also provides the teacher an

opportunity to identify important topics and to guide further activities or discussion.

Let creativity flow

- When using reflective mediums it is usually best to encourage students to use the various art forms in whatever way creatively stimulates them. Although the first strategy suggests that students do need direction it is important to allow for flexibility within the guidelines so that students can feel free to express themselves and accurately portray their thoughts and feelings on a variety of topics.



Activity Suggestions

- Have students visually represent the journey of the food they eat. They may use photos that they take themselves. Fieldtrips or family trips to farms, grocery stores, farmers markets, etc. can be encouraged to showcase the entire production system. This activity could also be captured on video and shown to larger community groups or to other students in a school.
- Using poetry, art or other medium, express feelings for the state that the environment is in currently, and what you would like to see in the future.
- Using photography capture the positive and negative FAE relationships in your local surroundings.
- Visit a rural area, or a working farm. Take photographs to document the primary production location of the food which is eaten. Use these photos to create a picture book for younger students to teach them about FAE.

Useful Resources

- Focus on Nature <http://www.focusonnature.ca/>
- A Practical Guide to Photovoice http://www.pwhce.ca/photovoice/pdf/Photovoice_Manual.pdf
- Get to Know Contest <http://www.get-to-know.org/contest/canada/>
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*We will conserve only what we love.
We will love only what we understand.
We will understand only what we are taught.
Baba Dioum, Senegal proverb*



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