Transforming post-secondary level learning: a theoretical and practical investigation of sustainability education

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The Biosphere Sustainability Project

The "Biosphere Sustainability Project" is an SSHRC-supported inquiry, more formally called "Citizen Engagement in Governance for Socio-Ecological Sustainability: Concepts and Case Studies". Its purpose is to draw together concepts and insights, along with case study applications, from three rapidly developing areas of academic enquiry (complex open systems, sustainability of social-ecosystems, and civil society roles in governance) and to determine, through consultations with examples, the potential application and usefulness of some of these concepts and insights for people associated with biosphere reserves in Ontario.

Biosphere reserves were chosen mainly because of the stringent criteria they must meet to receive this designation of recognition from UNESCO. The criteria include local organizational arrangements for developing collaborative capacities to address local and regional issues about the ecological, economic and ethical components of enhancing the sustainability for local communities and individual livelihoods. People associated with these local organizations are informed and committed to the ideals of sustainability and thus are in a good position to identify which perspectives, from among a range of concepts and examples from the academic literature, could be especially appropriate to the situations they are in and are striving to improve.

This investigation of sustainability education and application to biosphere reserves

One of the three core functions of biosphere reserves is the facilitation of research, education and monitoring. In promoting sustainability, biosphere reserves hold a responsibility to support education that fosters this overall goal. The research reported in this monograph looks at formal education delivery for fostering sustainability. The recommendations and findings are especially applicable to sustainability education development opportunities within biosphere reserves, but are relevant also to other places with similar objectives.

This research provides an in-depth exploration of the sustainability education concept and examines Canadian models being used to carry out sustainability education in practice. The lessons learned from this research are intended to provide insights for the development of effective education opportunities within biosphere reserves and elsewhere. Biosphere reserves offer an appropriate application site for sustainability education because they support that education is central to developing models of sustainability.

A thorough examination of the literature led to a definition of, and set of defining criteria for, sustainability education. The criteria identified for sustainability education are learning opportunities that are: experiential, place-based, interdisciplinary, collaborative, and focused on sustainable community development. Two Canadian case studies were selected using the five sustainability education criteria: the Coady International Institute in Nova Scotia and the Falls Brook Centre in New Brunswick. These case studies were

then examined first hand by the researcher using web-based review, grey literature, long interviews, and participant observation research. The resulting collection of qualitative data was analyzed through the lens of the sustainability education criteria. The analysis illustrated that while the two programs varied significantly in format and structure, the five criteria were demonstrated in practice in both cases, suggesting that these criteria be considered as appropriate for developing sustainability education programs. The research revealed other characteristics that could be added to the suite of sustainability education criteria; these characteristics are identified and recommendations are made for further research.

The Author

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INTRODUCTION

Education is an important vehicle in forming our future by way of nurturing the necessary values, perspectives and capacity to live more sustainably on the planet (Moore, 2005; UNESCO, nd; Yeung, 2004). Higher education has the potential and, according to some, the responsibility, to embody sustainability and to develop citizens able to actively shape a sustainable future (Haigh, 2006; Nath, 2003). One field that responds to this challenge is sustainability education, which offers a way to develop citizens that are informed and motivated to facilitate a shift towards a more harmonious relationship with the earth (Benn, 1999; Dyer et al., 2006; Haigh 2006; Huckle & Sterling, 1996; Moore, 2005).

The overarching goal of this research is to aid in the creation of educational programs designed to encourage changes in behaviour that will create a more sustainable future in terms of environmental integrity, economic viability, and a just society for present and future generations.

There are four objectives guiding this research:

1. to explore the concept of sustainability education and develop sustainability education criteria;
2. to explore the models being used to deliver sustainability education in Canada at the post-secondary level;
3. to evaluate them for effectiveness according to sustainability education criteria; and,
4. to propose recommendations and further research to be done based on a discussion of the findings.

This research is designed to explore models that are being used in Canada to deliver sustainability education at the post-secondary level. It is intended to make a modest contribution to the academic literature, offering a set of defining characteristics for the sustainability education concept, and highlighting exemplary programs currently being delivered. Practical recommendations from the study will ideally contribute to the development of sustainability education programs, particularly in UNESCO World Biosphere Reserves.

LITERATURE REVIEW

The literature review was a process of scoping down the wide range of education concepts and learning theories to a digestible conceptualization of sustainability education. What became clear from a thorough search of the literature is that many existing educational approaches include only some important elements of a successful education model, and own their own are incomplete. Hence, sustainability education has emerged as a holistic education model (Tilbury, 1995) that merges a variety of alternative

education models (Shallcross et al., 2007; Woodhouse & Knapp, 2000), including environmental education (Clover, 2000), global citizenship education (Pigozzi, 2006), ecological literacy (Bennett. 1974; Orr, 1992), and outdoor education (Ford, 1986, Knapp, 1996). The term is also used interchangeably with other titles such as "education for sustainable development" (Bonnett, 1999; McKeown, 2002; Nath, 2003; Seybold & Rieb, 2006;), "environmental education for sustainability" (Tilbury, 1995), and "environmental education for sustainable development" (Disinger, 1990; Sauve, 1996).

Many of these education streams emphasize nurturing conscientious and compassionate attitudes and behaviours towards the earth. This theme, most evident in the writings of David Orr (1992; 1994), is reflected in sustainability education through the five characteristics identified below.

Defining Sustainability Education

For the purpose of this work, and based largely on Janet Moore's description of the concept (2005), sustainability education is defined as participatory learning experiences that promote sustainability and build capacity within individuals for change. More specifically, sustainability education recognizes participants as agents for social change (Rudduck & Flutter, 2000) and provides an arena for these students to gain the knowledge and capacity to develop strong values, solve problems, develop solutions, communicate ideas, and influence policy, decision making, and their environment as a whole in a way that considers and nurtures sustainability now and into the future (Baraza et al., 2003; Dyer et al., 2006; Haigh, 2006; Moore, 2005; Nath, 2003; Orr, 1992; Rudduck & Flutter, 2000; Shallcross et al., 2007). The learning that takes place within sustainability education does not stop at the student level, but is used to educate the wider community through the dissemination of this knowledge (Haigh, 2006). Sustainability education programs consider the method of delivery as well as content, and provide the space "for inquiry, dialogue, reflection, and action about the concept and goals for sustainability" (Moore, 2005, p. 78).

Defining Characteristics of Sustainability Education

The researcher has attempted to provide a means of distinguishing sustainability education from other excellent and innovative education models by defining and identifying characteristics of sustainability education through the literature. From this process, five characteristics have emerged as essential to Sustainability Education. They are experiential, place-based, interdisciplinary, collaborative, and focus fundamentally on sustainable community development. Given that sustainability education must consider what content is delivered and how it is delivered (Moore, 2005), this research attempts to investigate not only the foundational principles behind sustainability education, but also how the teaching and learning should be carried out. In the five characteristics detailed below, sustainable community development describes the former and the other four characteristics describe the latter.

Experiential Learning

Experiential learning allows participants to learn by doing by providing hands-on experiences to form and enhance the learning (Andresen et al., 1995; Dewey, 1938; Wurdinger, 1996). These direct experiences are critical to the full understanding of sustainability education (Moore, 2005; Haigh, 2006). In the most basic form, participants in this learning process are cycling through stages of: concrete experience, observation and reflections, forming abstract concepts, and testing in new environments. This on going process allows for direct experiences with action-consequence, and taking ownership of their behaviours and outcomes. Rather than being told what will happen, participants see what happens (Kolb, 1984).

Place-based Learning

Place-based learning directs lessons towards the local environment and fosters development of a sense of place (Woodhouse & Knapp, 2000). This style uses the unique surroundings to shape the lessons and experiences of the students, somewhat overlapping with experiential and interdisciplinary learning (Gruenewald, 2003; Smith, 2007; Woodhouse & Knapp, 2000). In addition to those who have explicitly linked place-based education and sustainability education (Moore, 2005), many authors have recognized place-based learning as appropriate for outdoor, environmental, and ecological education (Gruenewald, 2003; Orr, 1992, 1994; Sobel, 1996; Thomashow, 1996; Woodhouse & Knapp, 2000). Rather than standardizing education across districts, boards, and provinces or states, this style attempts to tailor each learner's experience to his or her surroundings. Making lessons and projects relevant to the specific context has a variety of benefits: it helps bridge a connection between the academic elite and the local community; it aids in disseminating knowledge into the local arena; and it makes projects relevant and meaningful, enhancing participants' understanding and engagement (Gruenewald, 2003). Making these connections with the local environment also fosters active citizens for the future by showing them what it is to be actively involved in the community (Woodhouse & Knapp, 2000).

Interdisciplinary Learning

Studying sustainability involves examining a variety of subject areas simultaneously, rather than individually as in the conventional system that divides neatly into subjects (Francis, 1992). As a result, sustainability education must facilitate an interdisciplinary program of study to respond to its cross-discipline content (Moore, 2005; Nath, 2003). Interdisciplinary learning is described as the integration of various disciplines across a central theme, resulting in the learners' ability to carry out advanced critical thinking, incorporating various perspectives and relationships (Ivanitskaya et al., 2002; Tompkins, 2005). When this learning style is applied, participants are able to approach issues with a broader suite of problem solving tools. Subsequently, when issues are dissected from a variety of perspectives, they are understood more thoroughly and appropriate solutions are more likely to arise (Francis, 1992).

Collaborative Learning

In a collaborative learning environment, knowledge is something that is created among participants rather than being transferred from teacher to student (Moore, 2005). Individuals take responsibility for their learning and draw on each others' experiences and knowledge to create lessons and lead inquiry (Cranton, 1996; Dillenbourg, 1999; Dyer et al., 2006; Haigh, 2006). The conventional teacher shifts into the role of a facilitator and co-learner (Ali-Khan, 1995; Moore, 2005). This learning style acts as a vehicle to bridge knowledge, attitudes and actions (Shallcross et al., 2007) and enables and encourages teamwork (Ali-Khan, 1995). Collaborative learning aims to increase responsibility, leadership, creativity and ability to work in a group (Cranton, 1996; Ali-Khan, 1995), all of which are attributes essential to sustainability education (Bruffee, 1993; Dyer et al., 2006; Haigh, 2006; Joiner et al., 2000; Moore, 2005; Orr, 1992; Rudduck & Flutter, 2000).

Sustainable Community Development

For this research, sustainable community development is the characteristic that differentiates sustainability education programs from other innovative alternative types of education. While having the pedagogical attributes of the preceding four sections (experiential, place-based, interdisciplinary, and collaborative) sustainability education must also be driven by the overriding objective of sustainable community development, reflected in content and delivery.

A sustainable community is one that adapts to the changing social and economic needs of local citizens while respecting the limits of the natural environment. It is a community whose integrated components strengthen and enrich one another rather than restrict and degrade (e.g., sustainable food systems, transport, green space, social programs, resource use, employment and livelihood opportunities) (Hoff, 1998; Roseland, 2000).

According to Bridger (1997), sustainable community development is characterized by the following five dimensions:

1. An emphasis on increasing local economic diversity;
2. Self reliance through the development of local markets, production, processing, and greater cooperation among local economic entities;
3. A reduction in the use of energy coupled with the careful management and recycling of waste products;
4. Protection and enhancement of biological diversity and careful stewardship of natural resources; and
5. A commitment to social justice and efforts to create an empowered citizenry that can effectively participate in decision-making process (Young, 1990, p. 251).

In efforts to build sustainability at the local level, "changes are seen and felt in a more immediate manner" (Bridger & Luloff, 1999, p. 380). The potential for realizing practical examples of sustainable living is higher when attempted at a smaller scale (Yanarella and Levine, 1992); this minimizes many of the "political and cultural difficulties associated

with attempts to achieve sustainability on a global level" (Bridger & Luloff, 1999, p. 380). A tangible demonstration can then serve as a push for change in the broader context (Bridger & Luloff, 1999).

It is through this focus on sustainable community development that sustainability education programs begin to produce innovative thinkers, informed citizens, and inspired leaders that push for sustainable decision-making, solutions and action.

Table 1: Overview of Sustainability Education Characteristics

Characteristic	Description
Experiential	Hands-on, direct, learn-by-doing experiences with reflection on outcome.
Place-based	Learning is connected to the local context.
Interdisciplinary	Integration of various disciplines across a central theme.
Collaborative	Participants are collectively responsible for creating the learning experience.
Sustainable Community Development	Development driven from within the community that creates prosperous livelihoods, social harmony and ecological stability for generations to come.

CASE STUDY RESEARCH METHODS

Literature Review

The literature review was used to establish the concept of sustainability education and to explore existing models of sustainability education as potential case studies. Defining characteristics of sustainability education were identified through the literature, and serve as the conceptual framework guiding the research and evaluation of the case studies investigated. Consulting the literature is the essential first step in creating a foundation for the research. This is the appropriate way to become familiar with the topic and learn about the challenges, advancements and thinking that has already been done in the area (Palys, 2003).

Case Study Selection

Two Canadian case studies, the Coady International Institute and the Falls Brook Centre were selected based on the five characteristics of sustainability education identified through the literature and outlined above, and for their inherent differences in program delivery: the Coady International Institute is an academic, adult learning centre and will be the primary case study; the Falls Brook Centre is a demonstration centre geared for

younger audiences that offers no academic accreditation and will serve as the secondary case study. These two cases facilitated the qualitative data collection in this research.

Case studies are a popular social science research technique in both conventional and practice-based fields, such as education (Yin, 2003). This research approach is flexible, allows for the investigation of cross-case patterns and encourages creative insight by observing a "juxtaposition of conflicting realities" (Eisenhardt, 2002, p. 29). Case studies allow the researcher to "take advantage of emergent themes and unique case features" (Eisenhardt, 2002, p. 7), while gaining a personal familiarity with the findings. Given its strength in answering "how" questions (Yin, 2003), this technique is appropriate for this research; indeed we can simplify and phrase the research question as: "*how* is sustainability education being delivered at the post-secondary level in each of these case studies?". Paramount in the decision to use case studies is the preservation of "holistic and meaningful characteristics of real life events" (Yin, 2003, p. 2), and the multiple perspectives gained (Eisenhardt, 2002).

Qualitative Data Collection

Web-based review

The selected models were first investigated through their websites. Both case studies have extensive websites describing the nature of the institute/centre; this served as a preliminary screening tool to asses whether the organization qualified for this research based on the conceptual framework, and to become familiar with the organization prior to the field research (interviews and participant observation). The website provided a tool for learning the basic organizational structure and what programs are offered within an sustainability education context.

Web-based research is increasingly popular as a means to collect qualitative data (Romano et al., 2003). The amount of qualitative data available and the acceptability of this research approach are also growing (O'Connor & Madge, 2003; Romano et al., 2003). This approach advances how quickly information can be gathered and the amount of data that can be collected on a subject by overcoming spatial and geographical barriers (O'Connor & Madge, 2003).

Grey Literature Review

Grey literature includes an "extensive range of materials that cannot be found easily through conventional channels such as publishers, but which is frequently original and usually recent" (Tripathi & Jeevan, 2007, abstract) and is of great value (Banks & de Blaaij, 2007; Pavlov, 2007; Schopfel, 2006; Tripathi & Jeevan, 2007). This body of literature was gathered first hand while visiting the two case study sites. It expanded the researcher's understanding of the organization and its programs and served as material for qualitative analysis. Some of the documents detail the program structure and content in the form of a brochure, while others are publications written by staff members. Course material given to participants was also gathered and used in the analysis of the case study.

Long Interviews

The in-person individual interviews provided first-hand information and allowed the respondents to embellish answers (Palys, 2003). The personal interaction enhances the quality of information gathered because of the opportunity for both the participants to clarify questions and the researcher to clarify answers received, and the freedom to follow the unique direction the interview may take (Palys, 2003). Open-ended interview questions, suitable for the intention of drawing out the respondents' perspective in their own words, guide, but do not limit, the interviews (Palys, 2003). The qualitative nature of the research makes this gathering process one of the most valuable aspects of the study. This flexible and thorough examination through many perspectives meets the needs of a research component with such importance (Palys, 2003).

Key informant interviews took place at each of the two education centres. The interviews were recorded by the researcher in note form, accompanied by a digital recording device to ensure the accuracy of data. Interviewees are listed in Table 2 below.

Table 2: Case Study Interviewees

Case Study:	**Interviewee:**
Coady International Institute	1. Coady 1 – Staff
	2. Coady 2 – Staff
	3. Coady 3 – Staff
	4. Coady 4 – Staff
	5. Coady 5 – Staff
	6. Coady 6 – Staff, past participant
	7. Coady 7 – Staff
	8. Coady 8 – Participant
	9. Coady 9 – Participant
	10. Coady 10 – Participant
Falls Brook Centre	1. FBC 1 – Staff
	2. FBC 2 – Staff
	3. FBC 3 – Staff
	4. FBC 4 – Staff, past participant

Interview questions can be found in Appendix A.

Participant Observation Research

In POR, the researcher becomes an active participant and engages in the "daily activities, rituals, interactions, and events" (DeWalt and DeWalt, 2002, p. 1) of the individuals involved in the research. This approach allows the investigation to reach beyond explicit data gathered through communication and draw on observations, feelings and experiences to enhance the understanding of a group of people. Participant observation research enhances the accuracy, breadth and depth of qualitative research and is an

important and widely used tool in field research (DeWalt and DeWalt, 2002; Jorgensen, 1989).

Separating participant observation research from passive, everyday observation are the elements of recording and analysis carried out by the researcher. Field notes, described as "an ongoing stream-of-consciousness commentary about what is happening in the research, involving both observation and analysis" (Van Maanen, 1988), accompany the first-hand observations as a way of recording the experience. These field notes then serve as the data to be analyzed through the lens of the specific research.

For the purposes of this study, participant observation research was carried out for four days at the Coady International Institute and for two days at the Falls Brook Centre. Both staff and participants participated in this research. Participant observation research was used to strengthen the understanding of each program and how they are carried out. It was also intended to verify that the information about and perception of the program obtained from the grey literature, web-based review and interviews is consistent.

Qualitative Data Analysis

Given that these programs were selected for their embodiment of sustainability education characteristics as found through the literature, the analysis is intended to verify that these characteristics are carried out in practice, based on the qualitative data collected through the interviews, participant observation research and grey literature. The evaluation is based on the conceptual framework. The education models and their delivery tools are dissected through the lens of each characteristic defining sustainability education: experiential, place-based, interdisciplinary, collaborative, and focused on sustainable community development.

Limitations of the Study

Data collected from interviewing the staff and facilitators is subject to the biases of the interviewees as well as the interviewer. Participants may feel obliged to provide only positive aspects of the program, given the lack of anonymity in face-to-face interviews (Palys, 2003). To strengthen the integrity of the data collected about the cases, more past participant interviews would be helpful; these individuals may feel more comfortable to comment honestly and openly on the program in which they participated.

The number of staff and interns/apprentices available for interviewing at the Falls Brook Centre was limited. Unfortunately, there were no farm apprenticeships running during the time spent at the Centre, and there were no current interns available for an interview; therefore, participant observation research could not be carried out for this program. All information about the apprenticeships came from staff at the centre. There was one past intern currently at the Falls Brook Centre to provide an interview.

SUSTAINABILITY EDUCATION IN PRACTICE

The following sections include the qualitative data collected on the two case studies investigated. An overview of the case study is followed by a detailed description of the program delivery model and an analysis of the program using the sustainability education criteria.

Primary Case Study Overview: Coady International Institute

The Coady International Institute is an emancipatory adult education centre for community-driven development located in Antigonish, Nova Scotia. Originating from the Antigonish movement in the 1920s[1] and the resulting extension department at St. Francis Xavier University, the Coady Institute was established in 1959 to "[work] with innovative people and organizations to create effective and practical solutions to reduce global poverty and injustice…through leadership education, action partnerships, and initiatives" (Coady International Institute, 2005). The education at Coady is based on conviction that capacity building within the community by transferring skills and knowledge to community members creates the platform for sustainable change. The programs are structured to have participants walk away with practical knowledge and skills that will work in each of their context specific settings to create better communities (Coady International Institute, 2005).

The Coady program takes place in a facilitated learning environment on the St. Francis Xavier campus that recognizes the inherent potential in human beings to contribute to their own development and capitalizes on existing rich human assets to leverage change within a community (Coady 3, 2007; Mathie & Kearney, 2001). The program is founded on the principles of community development that builds capacity at the grass roots level for lasting change, and therefore the skills delivered are intended to generate change at the civil society and democracy level in order to have a sustained impact (Coady 3, 2007).

The institute offers a five-month Diploma in Development Leadership, several specialized three-week certificate programs, a link with St. Francis Xavier's Master of Adult Education Program, and a Youth-in-Partnership program. The diploma offering, which includes the three-week certificate programs, is the main focus of my research on Coady (Coady International Institute, 2005).

For the diploma program, approximately forty participants are chosen from around the world, and are often development leaders in their community (Coady 2, 2007; Coady 5, 2007). Participants come to "share ideas and to learn new strategies for social leadership and community-based development" (Mathie & Kearney, 2001, p. 3) and are led by the

[1] The Antigonish Movement was initiated by Rev. Dr. Moses Coady and Rev. Jimmy Tompkins in response to the poverty in Eastern Canada that was hurting farmers, fishers, miners and other disadvantaged groups. The movement focused on group action and adult education to encourage local community development for addressing the economic needs of local people (Mathie & Kearney, 2001).

Coady staff of “action researchers”, academic experts and practitioners in their field. The program plays out in blocks of material. These blocks are made up of an introductory session, mandatory courses, elective courses, specializations, “cooperative inquiry” (described in section 4.1.1), and an optional independent study.

Participants at the Coady Institute live and learn in the same environment. Dorm-style rooms are above the library, which is adjacent to the building with classrooms and staff offices. This intensive learning model is critical to the success of the program (Coady 2, 2007). Being immersed within the learning environment allows for focused attention on the material and freedom from distractions to experience quality reflection (Coady 5, 2007; Coady 9, 2007). Living and learning with the same group also facilitates more interaction between participants; some believe that the networking and sharing experiences are the most valuable aspects of the course for participants (Coady 5, 2007; Coady 1, 2007; Coady 9, 2007).

Delivery Model

In the 1990s and into the next decade, the breadth and depth of content delivered at the Coady Institute had grown significantly from its roots in adult education and co-operatives to a leading edge institute for “capacity-building and organizational strengthening among the disadvantaged” (Mathie & Kearney, 2001, p. 9). The learning is now geared for a wider audience: grassroots organizations, non-government organizations (NGOs), and government agencies. In contrast to the original emphasis on co-operatives, credit unions, and social welfare, the program is now designed, as Mathie and Kearney describe, “for critical analysis of (a) the political and economic dynamics that shape contemporary communities and (b) the strategies for change that engage those who have been marginalized in an active citizenship role at both local and global levels” (2001, p. 10). This change continues to be directed towards a sustainable global environment (Coady 3, 2007; Mathie & Kearney, 2001).

The content and delivery continually evolves over time to meet current needs and incorporate updated findings (Coady 3, 2007). In 2003, Coady underwent an internal content review, which found that the original principles on which the institute was founded are still relevant and that their commitment to an emancipatory adult education approach should be reaffirmed (Coady 3, 2007; Mathie & Kearney, 2007). The content of the program “has been influenced by global political and economic conditions, trends in development theory and practice, and new challenges faced by the participants in their day-to-day experience of community-based development” (Mathie & Kearney, 2001, p. 3). While the general subject nature is constant, the continual evolution of methods and content from global influence keeps the program appropriate and useful. Support for the content is confirmed through literature, continual interest in the program, and the global need for strong leaders and community-based capacity building. The need for people to get involved in decision making is still very much present (Coady 3, 2007).

One-time donations and isolated projects are a temporary fix that will hold a community in a position of reliance on outside help, referred to as the “dependency syndrome”

(Coady 3, 2007). Sustainability, the common thread throughout the integral development approach at Coady, targets generations to come as opposed to injections of change with no development in the true sense. The holistic perspective held by the Coady Institute appreciates that change must occur on many levels because tinkering in one area will not result in lasting change (Coady 3, 2007).

This belief plays out in the diploma program by way of offering knowledge and skills for Coady graduates to implement through their home organizations. Course material is developed in order to "train the trainers" (Coady 3, 2007) so that participants can return to their community to teach others what they have learned about being influential leaders for development.

In educating about community-driven approaches to development, the Coady Institute advocates a method of going to the people and asking what change they want in their communities. Speaking in regard to the international development agencies around the world that pick development projects to impose on under-developed communities, one staff member states, "It is arrogant to think that people in [one country] know what people in [another country] want or need... What we should be asking is, 'Does the community have a decided focus already?'" (Coady 3, 2007). Non-governmental organizations (NGOs) need to be catalysts and facilitators for change, rather than "driving the development bus" (Coady 3, 2007; Mathie & Kearney, 2001); that is the approach the Coady Institute educates for and demonstrates through its own teaching practice.

The transformative educational experience offered[2], in addition to facilitating new knowledge acquisition, is intended to renew the participants' commitment to social justice, and to illustrate the possibility of people's participation by showing examples of how people have been able to make a difference in their respective communities (Coady 2, 2007; Coady 3, 2007). The focus on sharing experiences between participants highlights the various efforts and successes of individuals and organizations. By creating a network of practitioners and development initiatives, strength can be found through information sharing, and in knowing there are others tackling the same issues.

To initiate the respectful, equitable environment intended by the Coady Institute, the course begins with a five-week introduction segment. With a variety of cultural backgrounds and experiences, daily morning meetings with a small group helps to build confidence within participants and relationships among peers (Coady 9, 2007; Coady 10, 2007). During this time, participants begin to build on each others' strengths and diversity while being introduced to transformative adult education through discussions on leadership.

The transformative learning process is an attempt to unpack and understand how participants see the world and their perspective on why it exists the way it does.

[2] Transformative learning is the process of fundamentally shifting individuals' frames of reference, through which we experience the world, and consequently changing the way we think, feel and act in the world; the shift is catalyzed by critical and self reflection (Cranton, 1996, Mezirow, 1997).

Questions driving this exploration include: What do you believe to be true? Where did the belief come from? Do you know it's true? Where do your attitudes come from? In the context of exploring leadership, the process begins by asking the question "what kind of leader does the world need?" (Coady 3, 2007). The underlying concept is that "how you see other people… and the way you look at other people affects the way you walk in the world. The way you understand the world affects the way you walk in the world" (Coady 3, 2007).

The emphasis on leadership built into the introduction block reflects the Coady Institute's belief that change starts with the individual and that "the leadership we need today is not the hierarchical class-privileged leadership most countries have, but rather leadership at grassroots and people recognizing the importance of people coming together in a community" (Coady 3, 2007). This concept of leadership is grounded in Ghandian (leadership by example) and Greenleaf (servant leadership) principles (Coady 3, 2007).

A large portion of the 23 weeks is comprised of mandatory and elective course blocks. The structure of the class time for these sessions is left to the discretion of the facilitator for that course. This maintains variety for the participants, and allows for many learning tools and skills to be experienced in the way that is most appropriate as felt by the facilitator (Coady 1, 2007). Part of the ongoing variety is maintained by having visiting experts from around the world come to participate in, or facilitate sessions (Coady 9, 2007). For example, in October 2007 professionals from Africa and China were brought to the Coady Institute to enhance specific course delivery.

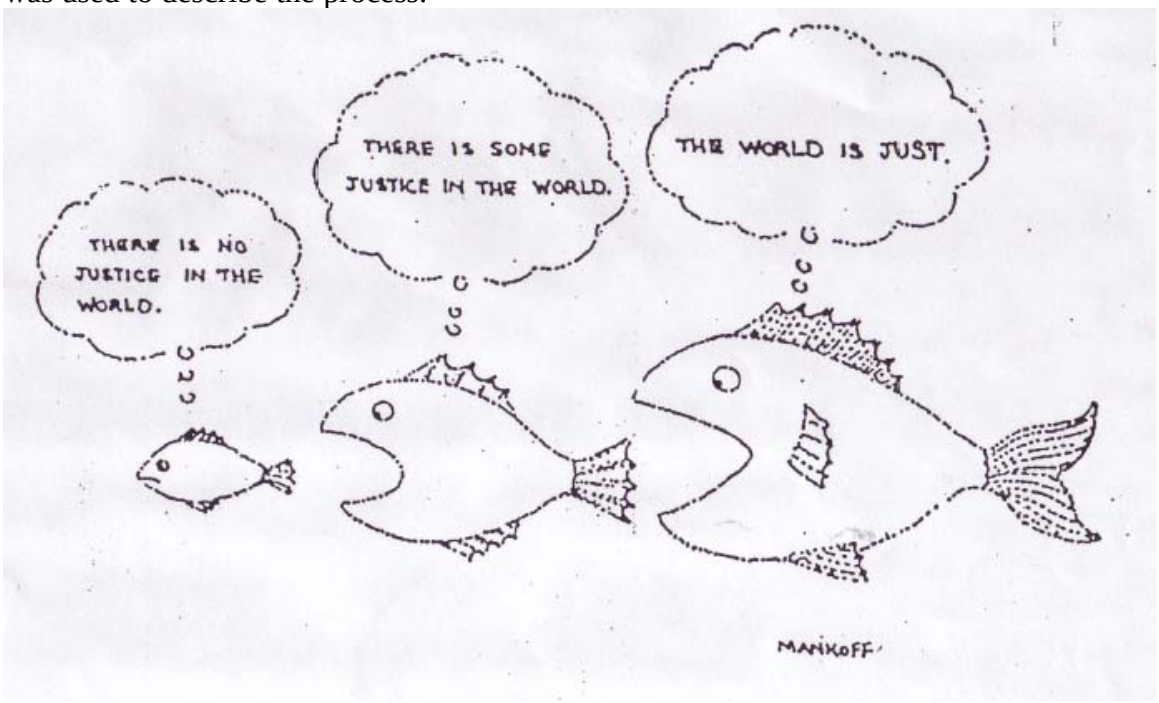
Some courses offered are delivered in a traditional lecture style, which is preferred by some students, and felt to be necessary by some teaching staff for particular course material (Coady 1, 2007). For example, in the monitoring course taught by Allison Mathie, she feels that lecture style is the most effective way to deliver "concrete technical skills" (2007). She knows that students are looking for specific skills to walk away with and in this case, a certain amount of conventional teaching is most appropriate. She integrates discussion in the class to keep it interactive and uses real life situations for assignments to provide an applied component. Others support that there is a time and place for lecturing, followed by an opportunity to apply the new knowledge (Coady 4, 2007).

In most of the courses taught, however, professors are facilitators rather than lecturers, there to encourage and guide the learning process rather than to simply deliver information (Coady 1, 2007; Coady 2, 2007; Coady 3, 2007; Coady 4, 2007); staff members consider themselves as research practitioners rather than as academics (Coady 3, 2007). One way of facilitating a course is to break the class into smaller groups to approach course material. These groups explore the subject through various research tools and deliver their findings, teaching each other from their own investigation and outcomes (Coady 9, 2007). Theory is used as a starting point, a framework for discussion. Facilitating the learning, rather than teaching specific techniques, allows for participants to take the theory and make it work for their own context. Blueprints for development

scare people at Coady, because everything is context based; development initiatives are not easily transferable to various other settings.

Questioning is one of the most powerful and common techniques employed in the program. Questions such as “so what?” and “what now?” are often used by the facilitators to catalyze the reflection process and ensure useful, practical outcomes from the research process. A frequent question used, related to the paragraph above, is: Does this work in my own context? “If you can’t put hands and feet on the theory and make it walk and talk, it is not useful” (Coady 3, 2007). Provoking continual reflection on content and lessons explored makes certain that participants are walking away with skills they can put to use.

Another tool used to facilitate learning is Adult Education Codes. These codes provide problem posing material for initiating discussion in a classroom. The following cartoon was used to describe the process:



(Mankoff, 2006)

“Rather than telling people about power and privilege, I can use the cartoon, or ‘code’ and ask questions to start discussion. For example, ‘What do you see in this picture?’ ‘Which fish do you relate to in this picture?’ ‘Which fish would represent your country?’” (Coady 3, 2007). In the context of transformative learning at Coady, this cartoon can be used to examine at how people see the world and to understand why people believe what they believe. The codes are an appropriate tool because they do not provide solutions, but rather open a discussion to deconstruct people’s perspectives by posing a problem. The codes keep it simple, and easy to digest and relate to (Coady 3, 2007).

The Coady program also uses the unique social history of the area to deliver course material. Some of the original concepts of the Antigonish Movement are still evident in the Coady Institute program that exists today. Participants are given the opportunity to visit these real life examples of grassroots development initiatives: "small fishing communities that organized themselves into producer and consumer co-operatives; and rural and urban communities where adult education took place through kitchen meetings and study clubs" (Mathie & Kearney, 2001, p. 3). The Antigonish Movement[3] is also observed through films and visits to the homes of the Movement's leaders, Fr. Jimmy Thompkins and Fr. Moses Coady (Mathie & Kearney, 2001).

Field trips, field based research, relevant case studies and interviews with actors in the local community are all tools used in various course work (Coady 6, 2007; Coady 5, 2007; Coady 1, 2007). In the Mobilizing Assets course, for example, individuals in the class have gone out into communities to test "asset mapping"[4] exercises taught in the classroom. Seeing the real impact this had on a community gave legitimacy to the theory for the participants (Coady 6, 2007).

A recent addition has been made to the suite of learning methods that has affected the learning style as well as content: that of "cooperative inquiry". The cooperative inquiry takes place for 3 of the 23 weeks of the diploma program and is guided by the participants. Using an "open spaces"[5] technique, participants brainstorm potential session topics above and beyond the content set out for the diploma courses. This is a chance to ask the "burning questions" (Coady 3, 2007) that participants have. Ideas put forth by the participants are then grouped by similarity and assigned a number from one to twenty-four. Each topic number then has a one hour discussion session; eight topics run at a time and there are three one-hour time slots. Participants then shop in this "marketplace of ideas" (Coady 3, 2007), exploring the various topics, coming and going freely between all of the sessions. Once the exploratory sessions have finished, using a "dot-mocracy" (Coady 3, 2007), each participant votes on their favourite sessions using dot stickers. The eight topics showing most interest through the dot-mocracy then become a session block for one week. All eight are offered in one week, so participants must choose one of the eight to sign up for.

In the week long cooperative inquiry session, participants are the key subjects and key researchers, and the facilitators take a passive role on the sidelines. The first step for each group is storytelling; everyone shares his or her own knowledge, ideas and experiences related to the topic. The process is highly participatory, with small groups brainstorming

[3] The Antigonish Movement was initiated by Rev. Dr. Moses Coady and Rev. Jimmy Tompkins in response to the poverty in Eastern Canada that was hurting farmers, fishers, miners and other disadvantaged groups. The movement focused on group action and adult education to encourage local community development for addressing the economic needs of local people (Mathie & Kearney, 2001).

[4] Asset mapping is community development technique used to create a visual display of the assets within a community. The maps produced by the community are then used as a reference point for community planning (Oxfam Canada & Coady International Institute, nd).

[5] An open spaces technique allows participants to move between discussion sessions and speak freely in the various topic conversations (Owen, 1997).

and using their various contexts to learn from (Coady 4, 2007). Step two is to look for common themes and assumptions. Step three is to decide the research approach (ie. literature, internet, interviews, knowledge from within the group, etc.). Step four is to meet every morning to discuss findings and to do research in the afternoons, and step five is to present the findings as a group to the rest of the participants. Each of the three cooperative inquiry weeks use a different medium of presentation which is set out for them. The first week is a poster presentation, the second is a "sociodrama"[6], and the third is a presentation technique of the group's choice. This allows participants to explore a variety of mediums and build strength in new presentation formats. During the cooperative inquiry, a learning journal is used to process the learning, constantly reflect on findings and discussions, and then try to make sense of it and pull all of the collected information together.

The first time the cooperative inquiry was held, facilitators for each topic had expertise in the area. Now, facilitators are intentionally put with topic groups in which they have little or no expertise. The intention of this change is to reduce the role of a resident expert for finding answers and to force the group to direct their own learning (Coady 3, 2007). The facilitators meet everyday to discuss each group's course of action and progress. This also serves as a support network for facilitators (Coady 4, 2007).

Both through verbal expression and formal course evaluations, the cooperative inquiry receives excellent reviews from participants (Coady 8, 2007; Coady 9, 2007; Coady 10, 2007). This model is also supported strongly by facilitators and staff at the institute (Coady 2, 2007; Coady 3, 2007; Coady 5, 2007).

Specializations within the diploma program are offered with the intention of allowing participants to focus on a particular area of development of their choice. They are offered in six three-week blocks and topics currently include:

- Advocacy and Citizen Engagement;
- Community-Based Conflict Transformation and Peacebuilding;
- Community-Based Microfinance;
- Mobilizing Assets for Community-Driven Development; and
- Organizational Learning and Change.

Participants also have the opportunity to complete an independent study on a topic of their choosing, or to undertake a study involving the local community to further tailor the program (Coady International Institute, 2005a). The flexibility of the diploma program enables participants to customize their learning to address their individual and organizational needs (Coady International Institute, 2005a; Coady 2, 2007).

Flexibility, in addition to being built into the program structure, is a key theme of the content delivered. "Educate for surprise and avoid specialization…people need to be like water, ready to adapt to any situation they find themselves in" (Coady 3, 2007). Part of educating for the unexpected is illustrated in a focus on knowledge, skills and techniques

[6] A sociodrama is a form of dramatic presentation in which the participants become actors to portray a real life situation.

rather than “cut and paste” development projects. The knowledge gained by participants through Coady is adaptive and malleable to fit various contexts and circumstances.

The Marie Michael Library plays a key role in the learning at the Coady Institute. This stems from the foundations of the Antigonish movement, the purpose of which was to provide knowledge sharing networks and to disseminate information into the community. Similarly, the attitude at Coady is that rather than holding knowledge in the hands of the academic elite, resources should be accessible and available to all (Coady 3, 2007). The library assistants are highly involved with the participants; they help to find information for personal research and develop collections for specific courses and group work. For example, in the cooperative inquiry sessions, the librarians will compile subject-specific articles and materials for the various groups based on their topic focus (Coady 3, 2007; Coady 7, 2007). Also of note is the superior collection of development and social justice material held within the library (Coady 2, 2007); it is evident that great effort and pride are taken in maintaining a rich body of resources. In my own experience at Coady, the library assistants were extremely helpful in facilitating my research within the library. From observation, it is also clear that the library plays a central role in participants’ day-to-day activities and their learning experience.

Further evidence of information sharing is a mini-library on CD that all graduates of the Coady program take away. This is a collection of research and writing that people at the Coady have synthesized, worked through, critiqued and put together over the years (Coady 2, 2007).

Integration with the St. Francis Xavier University community is most evident in two ways: meals are eaten in a common dining hall with other St. FX students, and as part of some undergraduate courses at the university, students will interview Coady participants to learn about their home organizations and professions (Coady International Institute, 2007b; Coady 1, 2007; Coady 9, 2007). The integration of Coady and the rest of the university could be strengthened to take more advantage of the wealth of human resources at the Institute. Bringing together the two student groups provides an excellent learning opportunity for undergraduate students and demonstrates to Coady participants how much they are valued (Coady 1, 2007).

Internal Program Evaluation

Program participants are the best source of evaluation for the program. The development approach delivered at the Coady is geared towards “helping people help themselves” (Coady 3, 2007). Therefore, one of the main sources of feedback is asking the question: Do people keep coming back for help? If organizations that have received education from the Coady show a continued dependence on the Institute for leadership, the education has not been successful (Coady 3, 2007).

Participants are continuously asking if the analytical and practical tools work for their own context and the direct communication accompanying thoughtful reflection provides useful feedback from the target beneficiaries on an ongoing basis. Similarly, Coady

graduates provide a tangible evaluation component from the organizations and development work they go on to be a part of. For example, successful NGOs and training centres have been set up by participant driven initiatives after leaving the program. “If we are doing our job right, we should be running ourselves out of business” (Coady 3, 2007).

Formal program evaluations are completed twice throughout the program: once as a mid-program evaluation, and once following the completion of the course (Coady 7, 2007). Information collected about the participants’ experience and used to improve the program for the next year (Coady International Institute, 2007). Formal evaluations also go out to Coady graduates to see how the program has influenced their professional roles (Coady International Institute, 2005b; Coady International Institute, 2005c).

During my time at Coady, I heard only positive feedback from participants. Each student I spoke to has had their expectations of the program met and exceeded, and emphasized the benefit of sharing their experiences with others in the development field (Coady 8, 2007; Coady 6, 2007; Coady 9, 2007; Coady 10, 2007). Evidence from the past two years’ formal evaluations, which are held in the Coady library, reinforced the particularly high satisfaction with the co-operative inquiry and library services. Overall the written feedback for the program is very positive (Coady International Institute, 2005b; Coady International Institute. 2005c; Coady International Institute, 2007).

Analysis

In this section, the qualitative data gathered for the Coady Institute will be analyzed through the lens of the sustainability education criteria for this research (see Table 1).

- *Experiential Characteristics*

The Coady Institute is true to its experiential learning foundation (Coady 2, 2007). The participatory approach used in many of the courses, in addition to providing a helpful learning method, is a lesson in itself. Facilitating, moderating and team building used to deliver the courses are also key skills for development leaders (Coady 2, 2007; Coady 5, 2007). So while the formal subject of the course is teaching about one thing, the tools used to orchestrate the discussion, investigate and present findings are simultaneously teaching other practical skills. These tangible skills are explored by putting them into practice, consciously exploring the outcome first hand, and formally reflecting on the experience.

The field trips into local communities to test skills learned in class are experiential learning events. The “asset mapping” field trip is one such example. In this exercise, participants take the asset mapping techniques explored in class into existing communities and witness the successes and challenges of applying these methods first hand.

• *Place-based Characteristics*

Place-based learning is an exciting component of the diploma program. The local history of the area has shaped the institute by providing foundational principles for development, and continues to characterize the learning model carried out today for local political and economic empowerment. The Antigonish Movement was initiated to mobilize producers and consumers in impoverished communities across the Atlantic Provinces. The power behind the Antigonish Movement was the combination of adult education and group cooperative activity to create change from the grassroots level, and that same principle remains the essence of the Coady Institute (Mathie & Kearney, 2001). The cooperative inquiry approach in particular mimics the study clubs of the Antigonish Movement in which content was participant-driven. The connection with the local history and practices is accentuated by having visits to the historic sites built into the program.

One of the learning tools encouraged in the program that connects course work with the local environment is interviewing local professionals related to the area of interest. For example, a group exploring domestic violence in a cooperative inquiry session interviewed people from a women's shelter, men's battering program, and the Naomi Society, all of which are local (Coady 3, 2007). The data collected did not include enough input from the participants to determine the extent to which their learning experience was linked to the local environment in practice.

The Coady program leaders not only use the place-based approach in their own teaching, but they also advocate this concept in development. Development projects must be driven by the local community. In a sense, development must take lessons from local level experiences. The Coady Institute is exemplary in this ability to demonstrate place-based learning in its own program and to encourage a place-based learning approach for development initiatives.

Although place-based research is encouraged in the form of interviews, it is not certain from the data collected how frequently it is used among the participants. The level of place-based learning could be enhanced through expansion of elements of the curriculum (other than the foundational ties) that are necessarily linked to the community.

• *Interdisciplinary Characteristics*

The broad participant base makes the program inherently interdisciplinary. The Coady Institute brings leaders of various development areas from all over the world to the program and therefore a multitude of backgrounds and perspectives are present to investigate the community development theme.

The integral development method cultivated at the Coady Institute requires a variety of disciplines. Given that sustainable development, from their perspective, must be achieved holistically in a community, this, by nature, involves many fields. Program content is in accordance with this and reflects and supports this principle. Subjects range from microfinance to peace building to citizen engagement, among many others (Coady, 2005a), and the action researchers are brought from across the globe to address a broad

suite of topics (Coady 9, 2007). Interdisciplinary learning is fundamental to the diploma program.

• *Collaborative Characteristics*

The diploma program offered is characterized by a collaborative learning method. In the facilitated courses, participants are pushed to draw on their personal strengths and background to guide the learning process, and therefore the classes are typically interactive and participant driven. Particularly with participants of such rich diversity, there is a strong emphasis on individuals and differences being valued and appreciated realizing that everyone has things to share and contribute to the learning (Coady 2, 2007; Coady 3, 2007; Coady 1, 2007; Coady 9, 2007). “Nobody has the answers or we wouldn’t be in the mess we’re in; so we have to work together, collectively, to find solutions and build a vision for the future” (Coady 2, 2007). By having facilitators in many courses rather than lecturers, and by creating an egalitarian, respectful atmosphere among participants and staff members, an open and collaborative environment is encouraged (Coady 1, 2007; Coady 9, 2007). The value given to creating an environment that promotes free exchange of viewpoints and experiences illustrates the commitment to a collaborative approach.

Collaborative learning is also facilitated through the considerable use of questioning to catalyze discovery. Posing questions to participants places the thinking into their hands, and the learning process becomes their own.

The cooperative inquiry is perhaps the most obvious example of collaborative learning. In this instance, participants are responsible for choosing the subject, deciding what will be researched, and determining what research methods will be used. The process from start to finish is owned by the group members, allowing for creativity and fostering effective teamwork to complete the week successfully.

• *Sustainable Community Development Characteristics*

Sustainable community development is at the very roots of the Coady Institute. Moses Coady, one of the founders, was already promoting the ideas of “land-ownership and environmental stewardship, and [integrating] them with concerns for social, economic, and environmental well-being” (Mathie & Kearney, 2001, p. 5). The initiation of the Coady Institute was oriented to provide leaders of the global South with education to take the economic fate of local communities into their own hands. Topics included: co-operatives, credit unions, adult education, and community development, based on the Antigonish Movement’s experience. Through the 1970s, the focus extended to include “new skills in project management and research methods” (Mathie & Kearney, 2001, p.7), based on demand from its participants. In the 1980s, while maintaining its attention to strong local economies as called for by sustainable community development (Bridger, 1997), the content transitioned once again and added “social transformation to eliminate injustice”. The growing breadth of content in the Coady program satisfies Bridger’s fifth dimension of sustainable community development (1997).

Reflecting this growth were courses in adult education, participatory planning and evaluation, and the mobilization of people's organizations, as well as an organizational change to demonstrate the participatory and democratic approaches advocated through the program. Gender as a social justice issue was also included with fervour at the Coady, with particular emphasis on mobilizing women and women's importance in institutions (Mathie & Kearney, 2001). Throughout the years, capacity building at the grassroots level for enhanced community wellbeing has been the driving force of Coady education, and supports longevity and resilience in sustainable community development efforts.

The Institute recognizes the importance of each component of sustainable community development and their intricate interrelations; however, Coady does not explicitly educate for the ecological aspect of sustainability as outlined by Bridger (1997). I argue that because the Institute recognizes all of the elements that constitute sustainable community development according to Bridger (1997), the omission of ecologically-based course material can be interpreted as an intentional specialization within other sustainable community development components (economic diversity, self reliance, social justice). This exclusion is discussed further below.

Table 3: Overview of Sustainability Education Characteristics in the Coady Institute Diploma Program

Characteristic	Evidence in the Coady Institute Diploma Program
Experiential	• Learning by participating in leadership • Field trips to test techniques and tools
Place-based	• Methods based in Antigonish Movement foundation • Visits to original sites of Antigonish Movement • Using local professionals as resources • Advocates development driven by local context
Interdisciplinary	• Participants' experiences guide the exploration of community development through a variety of development disciplines and backgrounds • A variety of course topics and course facilitators provide multiple perspectives to study community development
Collaborative	• Value participants' experiences and viewpoints in driving the learning process • Facilitators rather than lecturers • Questioning shifts responsibility of learning onto participants • Cooperative inquiry is an exemplary model of collaborative learning
Sustainable Community Development	• Coady Institute is founded on Antigonish Movement, which reflects the economic diversity, self reliance, and social justice principles within sustainable community development

	• Program is oriented to strengthen communities from within, by empowering citizens with skills and knowledge to steer their own development efforts

Second Case Study Overview: Falls Brook Centre

The Falls Brook Centre, located in Knowlesville, New Brunswick, is an organization geared towards education for a sustainable future. From youth education locally, to development partnerships internationally, the Centre demonstrates the potential for decreasing environmental impact while positively contributing to a local economy (FBC 1, 2007; FBC, nd).

The Centre consists of a solar conference centre, a straw bale museum, sauna, restoration nursery, forest trails, a small farm, organic gardens, staff housing, mushroom propagation, renewable energy demonstrations, camping sites and ongoing site projects (FBC, nd).

Audiences for the Falls Brook Centre consist of school and conference groups, schools that have workshops and programs come to their classes, and individuals that come to take part in events put on by the Centre (FBC, nd). Four main program areas are identified:

- organic agriculture;
- appropriate technology;
- community development; and
- forest stewardship.

Delivery Model

Two programs, the Youth Internship and the Farm Apprenticeship, at the Falls Brook Centre were explored for this research. The Youth Internship program, involves an initial internship at the Centre, followed by an international placement where the intern is involved in a partnership with another organization, and completed by a two-week debriefing period back at the Falls Brook Centre. The internships are funded by the Canadian International Development Agency (CIDA); CIDA determines how many internship positions will be funded and then the Falls Brook Centre interviews for that many placements and orchestrates the internship (FBC 3, 2007).

Internships are intended for young people finishing university, providing an opportunity for "practicalizing theoretical knowledge" (FBC 1, 2007). One of the former interns, now a staff member, explains that the internship is an excellent opportunity to shift from the theory-based learning in a University degree to work on the ground (FBC 3, 2007). The positions are advertised on the Falls Brook Centre website and are usually aligned with the main programs of the Centre (organic agriculture, appropriate technology, community development, and forest stewardship). For example, a student with a forestry degree

would come to work on a forestry stewardship project, and gain exposure to the intricacies of applied forestry by working with people in a variety of disciplines. The selection process involves a rigorous application and interview where applicants are made aware of the potential joys and challenges they will face since it is important to the staff that interns understand the demanding environment in which they will be immersed (FBC 1, 2007).

Once an applicant has been selected, the first week is designed for orientation on-site at the Falls Brook Centre. During the week, the intern familiarizes himself or herself with the intern's role and the Centre's property, facilities, staff members and natural setting (FBC 1, 2007). Each intern is given a staff mentor in one of the four program areas that is most relevant to their specific project. The mentor and intern collaboratively set out a work plan for the ten weeks spent on-site. Research is a main element of the internship, and part of the work plan is to define the participant's research project and what the daily objectives and final outcome will involve (FBC 3, 2007; FBC 2, 2007). Opportunities for skills building in the different program areas are woven throughout the ten weeks in the form of workshops. Language training for the overseas component is also included in the placement. Language sessions are offered in several formal lessons and are ongoing in informal settings such as dinners with other staff members. Because the Falls Brook Centre staff live and work together, the lines between work and play can be fuzzy, although both are highly valued (FBC 1, 2007; FBC 3, 2007; FBC 3, 2007).

While the internship generally has a defined focus, the responsibilities on-site are shared among all four programs. Interns will be involved in whatever the main projects at the Falls Brook Centre are at the time, and will take part in delivering the educational programs offered to school groups visiting the site (FBC 3, 2007). This structure exposes the intern to the inherent interconnections between all components of the Centre and the importance of teamwork (FBC 1, 2007).

The week before departing for the overseas portion, there is a focus on how to behave and react in a new culture, and reflection on what challenges can be expected.
One of the main objectives for the stay at the Falls Brook Centre before heading abroad is to give the candidates, who are usually recent university graduates, a chance to start sorting out the differences between the school environment and the outside world. It is better that they have that opportunity while still in their home country, rather than having them trying to come to grips with the new working world situation while in a foreign context (FBC 1, 2007).

Interns spend at least twenty weeks overseas. The interns do not arrive to set up or deliver a project, but rather to simply act as another hand in the partner organization, learning from whatever is going on in the organization at the time and learning from what other countries have to offer (FBC 3, 2007). There is consensus among the staff that these experiences are a two-way information exchange and interns are not there to "help"- given that we are all part of one planet and have lots of things to learn from one another (FBC 1, 2007, FBC 3, 2007). A past intern admits that one of the biggest lessons drawn from her internship was how much we, in Canada, have to learn from other countries, and

that it changed her perspective on international work. The international experience also made clear the enormous impact that the actions of Canadians have on the environment and on other countries (FBC 3, 2007).

Other key learning points from my visit include the importance of being self-motivated and showing the initiative to get involved with and complete tasks (FBC 1, 2007; FBC 3, 2007). Everyone at the Falls Brook Centre is busy with individual projects and therefore a lot of the work is self-directed (FBC 3, 2007). This is an important lesson to learn about the working world before arriving at the international placement (FBC 3, 2007). The internship is also useful in gaining credible experience to open doors in the NGO community. After the internship is over and the recent graduates are looking for a job, the international community development placement is a recognized asset (FBC 1, 2007).

Upon returning to Canada, interns revisit the Falls Brook Centre for a chance to reflect on the experience by talking to others at the Centre and in some cases, helping to prepare new interns for the adventure on which they are about to embark (FBC 1, 2007; FBC 3, 2007). Using the recent experience to prepare others is extremely helpful in processing the internship experience and assists in realizing the real value of the placement (FBC 3, 2007). The staff at the Falls Brook Centre recognize the value of having interns return to a group of people who are informed on the issues and excited to listen to the experience; returning back to a home community can be very difficult and an overwhelming change, and the Falls Brook Centre community offers a gentler transition (FBC 1, 2007).

The New Brunswick Farm Apprenticeship is the second Falls Brook Centre program investigated through this research. This hands-on educational experience is a six-month opportunity to see what organic growing involves and learn from experienced farmers (FBC 2, 2007). The Falls Brook Centre is linked with a number of organic farms in New Brunswick and coordinates applicants and the farms to set up appropriate matches (FBC, 2008). Some of the apprentices are associated with a community college and receive credit for the experience (FBC 1, 2007).

The program begins with a few days of orientation at the Falls Brook Centre and then apprentices disperse to their farm site where they are mentored daily in the field (FBC 2, 2007). The work on the farm is challenging both mentally and physically, and offers potential culture shock of remote living. Mid-season placement swaps are arranged for apprentices wishing to experience a different farm for one week. For example, someone at a farm geared mainly towards medicinal plants is given the chance to participate at a fruit tree farm (FBC 1, 2007).

The Falls Brook Centre facilitates a workshop every month for the apprentices, mentors and other interested members of the public. Workshop topics are linked to work on a farm, such as pest management, seed saving and crop rotation (FBC 1, 2007). The day is comprised of guest speakers, hands-on activities and a tour of the host farm. Farm mentors often attend the workshops and everyone in attendance benefits from the farmers sharing their experience and knowledge with each other (FBC, 2008a). The workshops

also provide a checkpoint opportunity for informal reviews, finding out how the apprentices are doing and feeling (FBC 1, 2007).

In addition to the hands-on work on the farms, participants are responsible for completing a research project on a selected topic. The research is an opportunity to explore a farming issue of interest to the host farm; mentors post three potential research questions for applicants to peruse when choosing their placement preferences. One example discussed was a research project in 2006 that explored the effects of pasture on pig growth (Falls Brook Center, 2008a). These research projects are presented at a farewell dinner held for all of the season's apprentices (FBC 1, 2007). Journaling and short assignments also coincide with the placement to enhance the learning that takes place in the field (FBC, 2008).

The apprenticeship program is supported by the Centre of Excellence in Agricultural and Biotechnological Sciences, the Organic Agriculture Centre of Canada, and the New Brunswick Department of Agriculture and Aquaculture. These organizations provide training and guidance for the apprentices and provide a support network for undertaking the research projects (FBC, 2008a).

Both the Youth Internship and Farm Apprenticeship programs are highly participatory and interactive between participants and the staff/organization. The director of the Falls Brook Centre has learned that critical to the success of the experience from both perspectives is that people need to feel that they are part of the process and that the learning is fun. The Falls Brook Centre is not the only institution to provide education out of the classroom setting, but what is special about their program, according to their director, is that participants make the learning happen for themselves. Topics are geared to involve and excite people and this leads participants to take learning into their own hands (FBC 1, 2007).

Internal Program Evaluation

Evaluation of the programs from the participants in the Farm Apprenticeship and the Youth Internship program is ongoing through open dialogue. For interns, evaluation is easily woven into the daily operations while on-site because all staff are living and working together. "Issues float to the top easily" (FBC 1, 2007), and if participants want more field time, or more time in the gardens, it is easy to communicate what you are looking for in such a small organization (FBC 1, 2007). For apprentices, periodic evaluation happens at workshops where they have a chance to interact with Falls Brook Centre staff face to face. A formal evaluation is also completed at the end of both the apprentice and internship programs.

Analysis

In this section, the qualitative data gathered for the Falls Brook Centre will be analyzed through the lens of the sustainability education criteria for this research (see Table 1).

• *Experiential Characteristics*

The format of the internship and of the apprenticeship makes the two programs inherently hands-on. The internship, both at Falls Brook Centre and internationally, is a chance to apply theoretical knowledge on the ground, and the farm apprenticeship is a chance to experience what it is like to be an organic grower.

The internship holds a variety of experiential components. Participants are engaged in applied projects based on the program area and the intern observes and learns from the process firsthand as the project takes shape from day to day. For example, one intern in the past was responsible for the development of the mushroom propagation project, growing shitake and oyster mushrooms on site (FBC 3, 2007). Given that interns are engaged in all program areas on site during their time at the Falls Brook Centre, they benefit from experiential learning in each of the Centre's activities including: helping with the livestock, tending the organic gardens, living off renewable energy and using outhouses, and delivering workshops and presentations (FBC 1, 2007; FBC 3, 2007; FBC 3, 2007).

Leading school groups through the on-site education program is also experiential learning for the intern; he or she will carry out demonstrations and program delivery, working directly with the students and with the site facilities.

When the intern is abroad, they are immersed in the partner organization, working first hand with their activities and projects. This is direct experience with a foreign culture, a new organization, and with the work in which the organization is involved.

The farm apprenticeship is also driven by the concept of experiential learning. Each day is geared towards learning farming practices firsthand. Given that the placement is six-months long, it presents a unique opportunity to participate directly with each stage of the growing season. Beyond the most obvious daily experiential learning opportunity, the periodic workshops also meet this criterion because of the hands-on activities provided by the host farm.

• *Place-based Characteristics*

The learning process in the internship is connected to the local context both at the Falls Brook Centre and overseas. The Falls Brook Centre reflects the local context in its programs with a focus on farming and forestry: the region's two most prominent economic staples. Interns, regardless of their particular program focus, are exposed to these issues by being immersed in the Falls Brook Centre environment; local environmental factors play an implicit role in the learning. Strengths and limitations of food production on-site teaches the details of the region's soil and climate, while local weather influences the generation of electricity used for work and living.

The centre is linked to the surroundings through the local school groups that visit the site. In this case, the visitors are doing most of the formal learning, but it can be assumed that

through this experience, the intern is learning about the local culture and the level of awareness and attitude of students in the area towards sustainable living.

The internships overseas are connected with the local context because of the nature of the work performed in the partnering organizations. Forest restoration, organic markets, food security and livelihood initiatives, and child protection issues are among the areas of work encountered in the overseas placements. While seemingly broad in focus, all are unavoidably linked with the local context. The challenges facing these developments, the processes involved to make them happen and the way the work is carried out, all teach the visiting intern much about the culture and local circumstances.

The farm apprenticeship program is fundamentally linked with local context because the host sites are local farms, and the mentors are local farmers. More specifically, the specific practices of the host farms reflect the biophysical details of the area, the local farming culture and the local market for produce. Apprentices would also gain an intimate understanding of regional soils, pests and weather given their significance to farming.

While there are certainly implicit place-based learning opportunities built into the structure of both the internship and the farm apprenticeship, it was not made clear through the qualitative data collected that place-based learning was intentionally part of either program. Clearly expressing the links made to the local environment may enhance the sense of place developed through the learning process.

• *Interdisciplinary Characteristics*

The common theme throughout the work at the Falls Brook Centre is sustainable communities; this thread is evident in each program area. By sharing a responsibility in all program areas to some degree, interns are exposed to the development of sustainable communities as it relates to each program discipline.

Building social and economic wellbeing within communities, while respecting the natural environment, is the motivation driving the community development program at the Falls Brook Centre, and is central to the common thread of sustainable communities. Through the Community Development program, the Falls Brook Centre delivers education and resources for local students, teachers and members of the public to build awareness for sustainable, vibrant communities (FBC, nd a).

In addition, the concept of sustainable communities is approached from an energy standpoint in the Appropriate Technologies program, exploring and implementing clean, efficient, renewable energy sources such as solar panels, wind-solar hybrid systems and biodiesel (FBC, nd b). The Forest Stewardship program illustrates the underlying theme because it is defined by a management philosophy geared towards “maintaining the forest's ecological integrity, minimizing the impact of harvesting on biological diversity, respecting the rights of forest-dependent communities, and conserving the forest's economic values” (FBC, nd c). The Falls Brook Centre is the Canadian member of the

International Analog Forestry Network and hosts an Acadian Forest Nursery project, in addition to being certified by the Forest Stewardship Council (FBC, nd c). Local food systems are a critical element of sustainable communities, and organic, local food is produced as part of the education at the Falls Brook Centre. Two and one half acres of organic gardens on the property serve as an education tool as well as sustenance for the staff year round (FBC 3, 2007; FBC 2, 2007). The food programs are international in reach, sharing subsistence food production practices with Honduras and Nicaragua through the Kitchen Garden program (FBC, nd d; FBC 3, 2007).

The farm apprenticeship program is an extension of the sustainable communities theme. Organic farming practices are a critical component of creating a sustainable system, providing food locally and respecting the integrity of the earth. Under the title of "farming", the apprenticeship does not show strong evidence of being interdisciplinary; however, organic farming implicitly includes a wide range of disciplines such as biology, hydrology, culture and soil science (FBC, 2008). The issues related to farming, such as energy to run the farm, and transportation of inputs and outputs would also provide expansion on the central subject.

• *Collaborative Characteristics*

As an intern, the format and progress of the research project is predominantly self-driven, with guidance from the staff mentor. The degree of involvement in daily activities is largely directed by the individual's initiative and motivation, leaving the learning potential in the participants' hands (FBC 1, 2007; FBC 3, 2007). This situation is different from typical learning environments in that there are not multiple interns that collaborate and therefore the intern is responsible for creating much of their own learning experience. Falls Brook Centre staff members are primarily in a support role to facilitate and enhance the educational process rather than to deliver it directly. Given the interconnections between the suite of programs at the centre, many endeavours involve input from a variety of staff members, exposing interns to teamwork and collective effort.

When an intern goes abroad, he or she is sharing and receiving knowledge from the partnering organization, creating lessons through the direct work experience and immersion in a foreign culture. The strong emphasis on leadership when overseas affirms the opportunity for directing the learning process and being responsible for the value of the experience. The close interactions with the members of the organization reinforce the emphasis on effective teamwork.

Most of the farm apprentice's involvement is directed by the mentor farmer. However, the individual research project opens the opportunity for creativity and initiative. Taking part in the complexities and sheer volume of work on an organic farm, the apprentice also learns the value of teamwork and how to be an effective team member. In this sense, the apprenticeship facilitates a collaborative learning experience. Working alongside the farmer and other workers on the farm, the apprentice learns mostly from observation and direct participation in the field, learning from the mentors' carefully tailored practices and experience.

• *Sustainable Community Development Characteristics*

The centre is driven by the objective of living more gently on the earth while developing prosperous communities (FBC, nd a). How each of their programs is dedicated to this purpose is explained under the Interdisciplinary theme. Through the on-site programs the Falls Brook Centre works to produce a smaller ecological footprint and protect and cultivate biological diversity. Through the international partnerships, the Centre contributes towards the building of healthy, self reliant local economies, and empowered citizens. Based on these initiatives, the Centre demonstrates a strong commitment to the sustainable community development principles set out by Bridger (1997).

The centre fosters the sustainable community development by delivering education and creating educational tools to be delivered by other educators (FBC, nd e). The approach to development supported at the Falls Brook Centre and highlighted by Barefoot Democracy, the partnership project in India, is that "target beneficiaries of any program are the best policy advisors, researchers and technicians for developing local solutions that will respect the local conditions and culture" (Meharu & Wong-Daugherty, nd). Their development process is participative and inclusive of the local culture.

Table 4: Overview of Sustainability Education Characteristics in the Falls Brook Centre Youth Internship and Farm Apprenticeship Programs

Characteristic	**Evidence in the Falls Brook Centre Youth Internship and Farm Apprenticeship programs**
Experiential	• Interns involved in applied projects on-site • Interns share responsibility for all on-site demonstration activities, including school group education delivery • Farm apprenticeship is based on a learning by doing approach
Place-based	• Local focus on farming and forestry is reflected in programs • An intimate understanding gained of the local biophysical environment because of its influence on daily life • Interaction with local school groups offers lessons on local culture and attitudes towards sustainability • Lessons overseas are tied to the local/host culture
Interdisciplinary	• Interns explore sustainable communities through the four program areas and from an international perspective • Farm apprentices explore sustainable communities through an organic farming perspective
Collaborative	• Intern research project and degree of involvement are self-directed • Falls Brook Centre staff provide support role for intern's learning experience

	• Strong emphasis on teamwork at the Falls Brook Centre and at placement overseas
Sustainable Community Development	• Falls Brook Centre initiatives demonstrate living lightly on the land while building vibrant social and economic community welfare • International partnerships are geared towards community empowerment and lasting local development • Education and education tools are developed to foster sustainable community development within other individuals and communities

DISCUSSION AND RECOMMENDATIONS

The following discussion and recommendations should be considered as applicable to the development of sustainability education programs within Canada and abroad, with particular relevance to UNESCO World Biosphere Reserves, given their focus on education and modeling sustainability.

The strength of the support both from the literature and the case studies suggests that to create an effective sustainability education centre, the five characteristics identified in this research should be incorporated into its practice.

Inherently the two education centres differ in that the Coady Institute is organized for formal education, culminating in a recognized diploma for the participant, while the Falls Brook Centre is a working centre for international internships and apprenticeships. In some cases, apprentices at the Falls Brook Centre will earn credit from a community college for the placement, but otherwise, the centre is not linked with academics. Another distinguishing feature between the two respective forms of education is the area of sustainability to which each directs its attention. While both recognize reasonably equivalent concepts of sustainable communities, through programming and physical setting, the two are significantly divergent. For example, the content at the Coady Institute is filled with capacity building tools and the skills for mobilizing humans and their strengths as a community. The institution operates on a typical university campus in old, conventional buildings, with participants eating the standard meal plan, and facilitators commuting, in cars, to and from work.

In contrast, the Falls Brook Centre focuses on ecological sustainability through on-site demonstrations and community development issues through its international partnerships. The Falls Brook Centre embodies sustainability through its demonstrations of green technology and buildings, sustainable food systems, and wildlife preservation, among others. It should be stated however, that the Coady Institute does not claim to be a sustainability education centre, but rather was chosen based on its demonstration of the sustainability education characteristics in the research selection process. What can be taken from their comparison is that the characteristics of sustainability education, as set

out in this research, are demonstrated at both centres despite being very divergent with respect to their mandates, focus, and on-the-ground activities. Arguably, the suite of sustainability education characteristics is relevant and applicable for learning models, regardless of the physical structure of program or organization.

Further research could benefit from a study of the advantages and disadvantages of providing education that more fully reflects both the social justice and the ecological components of sustainability. A holistic approach to sustainability education would perhaps better demonstrate the interconnections between all components of sustainability. However, there may be some particular benefits of having a centre that specializes in one broad area, such as the Coady Institute, which has been highly successful for community driven, sustainable development.

Strong similarities do exist between the two approaches. For example, both centres use an immersion structure in which participants live with the people they are learning with. This could be a result of location; both are situated outside of an urban core, decreasing the capacity for housing and ease of finding living space. The Coady Institute is dealing with international students and therefore finding temporary housing for each participant would be difficult. The residence is in the same location as the learning facilities, and all of the participants are together in one building. The Coady now identifies the immersion setting as a strength in the success of the program. Falls Brook Centre interviewees recognize the challenges associated with the immersion model, but agree that it holds more value than its alternatives.

One potential challenge of an immersion experience is the success of lasting change within participant lifestyles once the experience is completed. Particularly for younger people who, unlike the development leaders at Coady, may not be committed to sustainable community development through the lifestyle they will be returning to, maintaining the practices learned through the education may not be easy. Similar to experiential therapeutic educational programs for example, to facilitate permanent changes in behaviour once they complete the program, aftercare programming is integrated throughout the experience. At the Coady Institute, each point in the delivery of skills and tools is followed by asking “how does this relate to my own context?” A great deal of energy is put into making sure the practice will work for the participants at home, in real settings. This is one way to encourage the transfer of learning.

The Falls Brook Centre staff recognize that in an immersed environment problems can escalate very quickly. The lines between living and learning are literally seamless, and they have a very small group of staff. To make the situation work well, everyone must be very sensitive towards how people are doing and feeling and issues must be addressed and mitigated before becoming a problem (FBC 1, 2007).

Investigation should be done to see if an effective sustainability education model exists that does not use an immersion format. Based on these two cases however, an immersion format appears to be appropriate, giving the participant the opportunity to be free from distraction and to realize the full potential of the learning experience by living and

learning the same principles. Techniques to facilitate the transfer of learning from an immersion program into home life should be explored in order to create effective, lasting change and maximize the benefits this style.

Reflection is a high priority at both the Coady Institute and the Falls Brook Centre. This component is inherent in the definition of experiential learning, a characteristic set forth in the selection and evaluation criteria; however, both experiences go beyond the immediate, subconscious reflection of outcomes associated with hands-on learning. Reflection time is more frequent in the Coady program, as it is a pillar in their transformative learning method. At the Falls Brook Centre, reflection is facilitated in the debriefing phase upon return from the overseas internship. During the farm apprenticeship at the Falls Brook Centre, the informal evaluation performed at the monthly workshops implicitly serves as a catalyst for participant reflection on the experience. Reflection should therefore be considered as an important component of the education process.

Based on the observations at the case study sites and supporting literature, transformative learning should be explored as an additional characteristic of sustainability education (Cranton, 1996; Moore, 2005; O'Sullivan, 1999). At the Coady Institute, transformative learning is explicitly built into the program. Evidence of this learning method is in the significant effort given to asking questions and deconstructing why people believe what they believe. The adult education code described in section 4.1.2 illustrates one example of the incorporation of transformative learning and the tools used to carry it out. Evidence of transformative learning is also found in the weight placed on reflection at both places. To overhaul humans' destructive actions, we must overhaul the underlying values and perspectives at the root of these actions (Moore, 2005; O'Sullivan, 1999). From what was observed through this study, further examination of the role of transformative learning in sustainability education is appropriate.

Community-driven development is a key component of the sustainable community development concept observed in both case studies. The same philosophy of having the local community have authority over local development is expressed at both organizations. This was most clearly expressed at Coady by the Manager of Educational Programs who explained that development initiatives must start by going to the community and asking what change they want to see (Coady 3, 2007). At the Falls Brook Centre, this approach is made clear in the description of the Barefoot Democracy partnership in India; they believe the target beneficiaries should be directing local development (Meharu & Wong-Daugherty, nd).

Integration within, and acceptance by, the local community was not investigated for either centre. Further research could include interviewing the community members around sustainability education centres to gain their perspective on its presence and integration within the community. Congruent with the development approach advocated by the two case studies, the local community should steer the development within its borders. A sustainability education institute should be no exception. Evidence of integration exists at Coady in that participants are encouraged to capitalize on local

experts to perform research, and are formally matched with St. Francis Xavier students to share experiences. It would be helpful to hear from the surrounding community to what degree this happens and is accepted by the local people.

The program timetable at the Coady Institute offers a unique structure to consider. The mandatory, elective and specialization courses run for three weeks at a time, and this produces mixed reviews from those involved. Allison Mathie, a fulltime staff member at the Coady, expresses challenges from the staff perspective of the block format: "It's a trade-off," Mathie explains, "there are benefits to having an intensive learning session, only thinking about one thing at a time; however, it is a very short time for writing assignments and therefore the quality and depth of research may be sacrificed" (2007). Additionally, by the time the assignment is marked and returned, the student is onto another course session and the feedback may not be used to develop further. She believes participants might get more out of a slow and gradual learning process (Coady 1, 2007). However, feedback from two participants with respect to the block format was positive. It allowed for more focused study and full attention and energy given towards the subject (Coady 6, 2007; Coady 9, 2007). More investigation should be done to consider this format as a model.

What is unique about the seamless learning-living environment at the Falls Brook Centre is the opportunity for interns to truly experience living lightly while learning and teaching about it. Because the site is a demonstration in itself, daily life models the theory behind the work carried out. The centre makes sustainability a reality and makes it tangible for people involved in the program. The same is true to for the Coady Institute, but unfolds differently because of the differences in primary focus. The program advocates participatory democracy and this is demonstrated by the learning model: all participants are given a voice, are valued, and have input into the processes taking place. The cooperative inquiry embodies these characteristics most fully.

Learning from these examples, a new sustainability education institute should exemplify the concepts and approaches advocated through the content delivered in the program. An institute designed for the promotion of sustainability in the broad sense, means being an example of social justice, internal economic stability, ecological stewardship, vibrant culture, and demonstrating how all of these aspects mutually reinforce one another. The institute needs to serve as a model for the practices being prescribed to give participants the chance to experience what they are striving to attain and to see that such a system is possible.

<u>Overview of Recommendations</u>

1. Consider the proposed suite of sustainability education characteristics appropriate as a starting point for sustainability education models;
2. Compare the benefits of providing a holistic approach to sustainability education to the benefits of specializing in one area of sustainable community development (for example, social justice);

3. Investigate whether an effective sustainability education model exists that does not use an immersion format and compare its benefits to those expressed by immersion centres;
4. If an immersion setting is found to be most effective, explore techniques to facilitate the transfer of learning from an immersion program into home life;
5. Integrate deliberate reflection time as a component of the education process;
6. Explore transformative learning as an additional characteristic of sustainability education;
7. Conduct further research on the integration and acceptance of sustainability education centres in their local communities;
8. Consider the advantages and disadvantages of the shorter block format model for program sessions as demonstrated by the Coady Institute; and
9. Embody the principles and values advocated through the program.

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Appendix A: Interview Questions

1. How have the goals and objectives of the [centre/organization] evolved over time?
2. In your opinion, how successful are the programs at meeting the objectives you described above?
3. Do you evaluate whether or not participants have experienced the intended outcome? If so, how?
4. What do you think are key characteristics of sustainability education initiatives?
5. Please describe the tools you use to deliver sustainability education at the post-secondary level. Do you feel that some are more successful than others? Why?
6. What lessons have you learned about delivering sustainability education in your time here?
7. In summary, from your perspective, what is unique about this [centre/organization]?
8. Who else should I speak to?
9. What are the key documents I should read?