



Biodiversity

Climate Change

Economics and Sustainable  
Consumption

Ecosystems

Energy

Food and Agriculture

Governance, Citizenship,  
and Community

Human Health and the  
Environment

Indigenous and Local  
Knowledge

Peace and Human Security

Sustainable Urbanization  
and Transportation



## Canadian Sustainability Curriculum Review Initiative

Rationale, Context, and Scope

March 15, 2006



Learning for a  
Sustainable Future

# LSF

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## The Canadian Sustainability Curriculum Review Initiative

### Executive Summary

Curriculum Policy, organized by subject and grade level, directs what is taught in Canadian schools. Changes to curriculum policy take place through the Curriculum Review, Development, and Implementation (CRDI) process in each province or territory. This project supports the improvement of curriculum policy by participating in CRDI processes across Canada. As our contribution to ongoing educational reform, we focus on the fundamental concepts for twelve themes or topics with which every citizen should be familiar, and the most effective instructional methods that can be used to address them at the classroom level.

Humans and the natural systems in which they live are experiencing increases in pollution, a decrease in the resource base, ever greater social inequity, and threats to health, all of which cloud our children's future. The United Nation's Decade of Education for Sustainable Development, starting in 2005, is the international call for all jurisdictions to review their educational programming as a means of preparing their citizens to meet the mounting challenges through informed decision making and active democratic civic participation. The *Canadian Sustainability Curriculum Review Initiative*, a project of *Learning for a Sustainable Future*, is one Canadian response to the call for action.

Twelve themes have been selected from twenty-one identified by the UN and include: Biodiversity, Climate Change, Economics and Sustainable Consumption, Ecosystems, Energy, Food and Agriculture, Governance-Citizenship-Community, Human Health and the Environment, Indigenous and Local Knowledge, Peace and Human Security, Sustainable Urbanization and Transportation, and Water.

For each theme we use relevant research literature and practice to identify the fundamental concepts, related skills, and values that should be included in the four stages of each student's educational experience: Kindergarten to Grade 3, Grade 4 to 6, Grade 7 to 9, and grade 10 to 12.

In support of the application of the twelve themes in the CRDI process, the following reports have been prepared or are in progress:

- **Canadian Sustainability Curriculum Review Initiative:** Rationale, Context, and Scope
- **Education for Sustainable Development –International Survey**
- **Curriculum Review, Development and Implementation (CRDI) across Canada-Current Practices and Opportunities for Participation**
- **Instructional Methods and Education for Sustainable Development**
- **Status of Education for Sustainable Development across Canada**

The theme documents are formative in nature and are designed to spark further research and collaboration to ensure that curriculum policy across Canada reflects our best

understanding of how to prepare citizens for the future challenges we face.

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## 1. Introduction

### a. Rationale

A well-established practice in all provincial departments or ministries of education is the Curriculum Review, Development, and Implementation (CRDI) process. Each jurisdiction in Canada follows a similar course of action that involves:

- reviewing current curriculum policy documents noting deficiencies and needed changes;
- developing new curriculum policy documents in response to the reviews; and
- implementing new curriculum policy at the school board or district level.

In this way, change in curriculum policy, and to a much lesser degree, instruction, takes place on an ongoing basis.

Formal curriculum policy is only one component of the education system. It is however a component that has a system-wide impact. It is difficult to envision large-scale changes in educational practice and content at the classroom level without first seeing those changes in place in curriculum policy. In addition, curriculum policy change impacts long-term resource allocation, teacher training, and development of secondary support resources such as text books.

***It is difficult to envision large-scale changes in educational practice and content at the classroom level without first seeing those changes in place in curriculum policy.***

The UN Decade of Education for Sustainable Development (ESD) starting in 2005 is a rallying call to bring about renewed activity and collaboration in meeting the challenges of social, economic, and environmental sustainability through education. This project is one Canadian response to this call with the goal of ensuring that Canadian curricula address key sustainability themes based on our best understanding of the learning process at this time.

Initially, twelve topic themes, described in Appendix A, have been selected from the UN list of twenty-one and include:

- *Biodiversity*
- *Climate Change*
- *Economics and Sustainable Consumption*
- *Ecosystems*
- *Energy and Its Use*
- *Food and Agriculture*
- *Governance, Citizenship and Community*
- *Human Health and the Environment*
- *Indigenous and Local Knowledge*
- *Peace and Human Security*
- *Sustainable Urbanization and Transportation*
- *Water*

**Learning for a Sustainable Future** has promoted sustainability education across Canada for the last 15 years following its inception from deliberations of the National Roundtable on the Environment and Economy. Through its tripartite view -environment, society, and economy- and its interest in public education policy, it is well positioned to lead this cross-Canada initiative.

The phases of this project are analogous to those in the CRDI process: review, development, and implementation.

## **Review**

Activities in the review phase include a survey of Education for Sustainable Development (ESD) initiatives at the international level addressing policy and best practices in curriculum and instructional methodology. Results of LSF's research to identify the status of CRDI in each jurisdiction in Canada and the opportunities for participation will be summarized in a separate document. An Instructional Methods document will identify those teaching tools that best support ESD goals. The status of ESD in Canada will not be completed until March of 2007.

## **Development**

The development phase includes preparing curriculum benchmark documents for each theme, and determining the phase of the CRDI cycle for each subject in each province. Theme documents will be prepared based on the research literature and experience at the classroom level.

## **Implementation**

The implementation phase will see this work applied to relevant curriculum policy documents across the country timed to the status of provincial and territorial CRDI activities. Implementation is a relatively long-term process that will require active

promotion over several years.

Progress for the entire project will be measured by determining the changes in curriculum policy that have taken place across the country.

The initial theme documents should be viewed as formative in nature. Individuals and organizations with expertise in each theme will be asked to verify and assist in clarifying school exit outcomes that apply to all citizens. In turn, educators will address how themes should be presented at each developmental stage in a child's growth, as well as the instructional methods that can be used to achieve the best learning.

Meanwhile, as research about the most effective educational content and strategies is identified for each theme, updates to the documents will occur. To aid these efforts we invite and actively solicit the participation of all educators and theme experts in assisting in identifying the most relevant research and practice.

## **b. Goals**

This project supports a transitioning of educational practice. Its success will see a step in this transition process, not an end product. The goals for this initiative include:

1. Prepare benchmark documents in twelve theme areas to ensure that the knowledge, skills, and value learning elements necessary for citizens to address social, economic, and environmental challenges are included in the learning experience of all Canadian students.
2. Identify the instructional strategies that prepare students to act as engaged citizens to meet current and future challenges, promote greater awareness of their use, and support educators who are currently employing these strategies.
3. Achieve curriculum policy change by applying the theme benchmark documents and thereby improve ESD in Canada.
4. Support ESD learning projects with a formal school system audience that are initiated and promoted by various government ministries, non-governmental organizations, and corporate community members by providing access to up-to-date research on education for the twelve themes and the best classroom level instructional methodology.

### c. Products

The following documents are planned as part of this project.

1. **Canadian Sustainability Curriculum Review Initiative: Rationale, Context, and Scope**
2. **Education for Sustainable Development –International Survey**
3. **Curriculum Review, Development and Implementation (CRDI) across Canada-Current Practices and Opportunities for Participation**
4. **Instructional Methods and Education for Sustainable Development**
5. Theme documents for each of the twelve Key Action Themes selected. Each theme document will identify the fundamental concepts, related skills, related values issues, and most appropriate instructional methods for each developmental age group. The first theme has been completed for the theme ***Energy and Its Use***. A similar format will be used for the additional themes.
6. **Status of Education for Sustainable Development across Canada**

## 2. Background

### a. Sustainable Development: A Context for Education Reform

Sustainable Development has become the overriding context for a worldwide response to threats to environmental, societal, and economic systems. It is a call to consider the future. The complexity of these challenges is great and escalating, leading to a consensus amongst members of the international community that an environmental crisis must be avoided by acting now. Education is seen as one important pillar of the response.

### b. Decade of Education for Sustainable Development, 2005 –2014

Deliberations for this project commenced prior to start of the United Nations' Decade of Education for Sustainable Development. Working within the context of this international initiative is consistent with the goals of this project. The framework for the UN's activities includes:

*“Reorienting Existing Education Programs: Rethinking and revising education from nursery school through university to include a clear focus on the development of the knowledge, skills, perspectives and values related to sustainability is important to current and future societies. This implies a review of existing curricula in terms of their objectives and content to develop transdisciplinary understandings of social, economic and environmental sustainability.”* (“UN DESD Objectives and Strategies,” UN Decade for Sustainable Development Website, 2005)

The UN Decade initiative has identified twenty-one Key Action Themes. This project will initially address twelve of these themes supporting the reorienting, rethinking, and revising of existing curricula. This will include supporting change in the nature of content and skills to be learned, adding and removing content, and promoting use of particular instructional strategies while de-emphasizing the use of others. The fundamental rationale for changes to educational practice is to best prepare citizens for active participation in democratic governance as a means of addressing the rising economic, social, or environmental challenges, individually and from the local community to international levels.

***The fundamental rationale for changes to educational practice is to best prepare citizens for active participation in democratic governance as a means of addressing the rising economic, social, or environmental challenges...***

The proposed objectives for the Decade of Education for Sustainable Development are:

1. To give an enhanced profile to the central role of education and learning in the common pursuit of sustainable development;
2. To facilitate links and networking, exchange and interaction among stakeholders in ESD;
3. To provide a space and opportunity for refining and promoting the vision of, and transition to sustainable development – through all forms of learning and public awareness;
4. To foster increased quality of teaching and learning in Education for Sustainable Development;
5. To develop strategies at every level in order to strengthen capacity in ESD.

### **c. Education for Sustainable Development –Scope and Depth**

#### **i. The Shift to Education for Sustainable Development**

In support of the United Nations' Decade of Education for Sustainable Development, LSF has adopted the term *Education for Sustainable Development (ESD)* to capture the scope of its work. It is important that educators not view ESD as another subject to add to a crowded curriculum plate, but one of several initiatives acknowledging deficiencies in current practice and supporting broad-based educational reform leading to youth being active and effective members of their communities. These include calls for change from the business community so that schools better prepare students for current and future economic roles, the citizenship education movement so that schools better prepare students to fully participate in their communities, and calls for education of the whole child, acknowledging that schools must prepare students for more than proficiency in basic skills.

***It is important that educators not view ESD as another subject to add to a crowded curriculum plate...***

ESD brings together elements from many curricular areas paying attention to social, economic, and environmental realms. ESD acknowledges the importance of all three perspectives and identifies interdisciplinary study, which reflects the complexity of issues in the real world, as essential. In general, ESD promotes the use of instructional methodologies that fit under the broad descriptor of active learning. The goal is to encourage an educational milieu that develops engaged citizens who will become active in making decisions that are based on a holistic understanding of the world.

ESD is consistent with a number of research-based educational practices and investigations including: brain-based research and constructivism, multiple intelligence research, gender education research, and school retention work.

## ii. Bridging Standards-Based Instruction with Education for the Whole Child

Improving proficiency in basic skills in literacy and numeracy currently dominates the educational culture in many jurisdictions in Canada. It is increasingly being recognized that what has been lost is the importance of the whole child. The goals of ESD indicate that more is required of education than good test scores.

Our schools, teachers, and students might be a lot better off if schools embraced the idea that education means learning what to do when you don't know what to do.

*Educational Leadership*, September 2005 (17)

Schools currently function through a subject-based organization of learning. ESD asks educators to expand beyond subject-disciplines to address important issues and challenges with their students. This is consistent with the educational research literature that explains that a comprehensive approach to learning and teaching works best.<sup>i</sup>

Recently the prestigious education journal, *Educational Leadership*, published by the Association for Supervision and Curriculum Development (ASCD), featured the subject of the whole child. ASCD expressed the concern that current practices and policy focus overwhelmingly on academic achievement. The ASCD believes “*a comprehensive approach to learning recognizes that successful young people are knowledgeable, emotionally and physically healthy, motivated, civically inspired, engaged in the arts, prepared for work and economic self sufficiency, and ready for the world beyond their own borders*” (17). ESD is consistent with this view.

Reading, writing and arithmetic are important only if they serve to make our children more humane.

*Haim G. Ginott*

## iii. Ways of Thinking<sup>ii</sup>

Promoting proficiency in “Ways of Thinking” is increasingly being recognized as important learner goals. These ways of relating knowledge need to be considered when designing programs that help prepare students to address complex sustainability challenges. Moving to include Ways of Thinking in curriculum policy provides a means of bridging subject-based learning with more holistic instruction based on issues that require students to develop complex reasoning skills.

To help in the development of each action theme and contribute to the evolution of curriculum policy that reflects ongoing research, this project will prepare working documents on each of the following Ways of Thinking:

**Systems Thinking** – which includes thinking about the “whole” in terms of its parts and how they relate,

**Scale** – where understanding relative size leads to a better understanding of events,

**Change and Continuity** – understanding in terms of ratios, proportions, and rates of change, and seeing events as part of the progression from past to future,

Education is a process of living  
and not a preparation for future  
living.

*John Dewey*

**Critical Response** – seeing the inherent importance of analyzing information and making judgments based on relevant evidence,

**Emotional Intelligence** – enabling students to develop self-control, empathy for others, and the social skills necessary for successful community participation.

Additional Ways of Thinking under consideration include: Temporal Perspectives, Sense of Place, and Cultural/Spiritual Perspectives.

***Fundamental Concepts or “Ways of Thinking” Underlying the Social Studies, History, and Geography Curriculum, Ontario Ministry of Education, 2004.***  
*Recent revisions to Ontario’s Grade 1 to 8 Social Studies curriculum identified several fundamental concepts (ways of thinking) as being the “conceptual framework within which topics are presented” that remain consistent throughout the curriculum from Grade 1 to 12 and give continuity to students’ learning. This conceptual framework includes: Systems and Structures, Interactions and Interdependence, Environment, Change and Continuity, Culture, and Power and Governance.*

## Challenges

- The traditional subject-based organization of curriculum policy needs to expand to include “Ways of Thinking” (see above). Ways of Thinking perspectives have been acknowledged in curriculum policy in a number of jurisdictions across Canada and need further support.
- Standards-based instruction narrowly focusing on literacy and numeracy currently holds the attention of educators in many jurisdictions. Work in a number of fields identifies that, context of learning, a focus on concepts over facts, teachers as facilitators, and inclusion of Ways of Thinking, among others, best support development of informed and active citizens.<sup>iii</sup> Bridging this gap is an important challenge.
- Educational terminology is not well established and is problematic. Different groups within the education community use different terminology for the same or similar concepts or practices.
- It is important that key theme documents be kept concise and manageable.
- Values instruction, especially when significant differences exist in the community, needs to be addressed. ESD Instruction must be designed so that it is truly educational and not of indoctrination approach where one set of values in the community is promoted over others without critical examination and reflection.
- For long-term projects such as this one, resource allocation is important. CRDI experience indicates that dividing resources between development and implementation in the realm of a 20/80 ratio will more likely lead to successful outcomes. Otherwise this work may suffer the fate of many other excellent learning resources that have been well prepared but reach few educators.

A democratic society needs an education system that helps to sustain its democracy by developing thoughtful citizens who can make wise civic choices.

*Educational Leadership*, Sept. 2005 (11)

## Benefits of the Approach

- The specificity of the theme documents will allow for measurement of progress in each jurisdiction over time during each part of the CRDI cycle.<sup>iv</sup> Each theme will act as a benchmark for essential theme concepts, skills, and values instruction supportive of ESD.
- This project will support a shift from current subject-based and standards-linked curriculum policy content to more interdisciplinary, issues-based learning which is strongly supported by different fields within the education research community.<sup>v</sup>
- The project identifies appropriate instructional methods for consideration for inclusion at the curriculum policy level.

- Theme documents will have value as resources for: pre and in-service teacher professional development initiatives, design and evaluation of learning resources and learning programs, and guidance of educational resource allocation.
- Each theme document will clearly outline instructional content and teaching methods from primary to late secondary years. This will enable educators to better understand the learning continuum for each theme.
- Theme documents will help identify those portions of current curriculum policy that can be considered for removal to reduce the problem of the “crowded” curriculum thus addressing this barrier to curriculum change.

### **e. Curriculum in the Formal School System**

The education system in each province is guided by formal curriculum policy commonly organized by subject and grade level, elementary to secondary.

School boards, school administrators, and classroom teachers implement curriculum policy through classroom learning. The degree to which classroom instruction reflects provincial curriculum policy varies considerably from school to school and class to class. Nevertheless, curriculum policy in each province and territory is the legitimate and overriding determinant of the content of student learning.

Secondary audiences for curriculum policy, which in turn have an important impact on classroom instruction, include textbook and trade book publishers, learning-resource developers, relevant government ministries and agencies, teacher training institutions, non-governmental organizations, and the corporate sector. With access to policy documents through online sources, parents increasingly refer to provincial curriculum policy documents when communicating with school staff.

In the re-orienting of what is taught in schools and to a lesser degree how it is taught, understanding and supporting curriculum policy change is an essential goal.

#### **Key Assumptions**

In this work the following key assumptions guide our activities:

- Curriculum change at the policy level is an evolutionary process with formal and informal components. Curriculum Review, Development, and Implementation (CRDI) is the formal change process. Each province has its own process with some level of co-operative effort taking place at the regional and national level. The complete CRDI cycle for any subject or grade may take as long as 10 years although recently reviews appear to occur more often.
- Curriculum policy is organized by subject. Support for curriculum policy change in the short term must be applicable in this context.

- It is important to match content, skill, and values learning outcomes or expectations with appropriate instructional methods to enhance learning.
- Students take common courses to the thirteen to fifteen year age range. In the final years of schooling, where specialization for the world of work and post secondary study takes place, a significant decrease in the number of common core courses occurs.
- Organizing learning by subject has contributed to the problem of the crowded curriculum. Content often consists of a great deal of subject-organized facts which, due to their volume, become incompatible with the use of many instructional tools. An interdisciplinary or issues-based organization of learning offers a solution to the problem.

### **3. Review Phase Initiatives**

#### **a. Establishment of a National Advisory Committee**

LSF has established a National Advisory Committee of educators to help guide the project from the design phase to implementation. The terms of reference of the committee include:

- Providing guidance on the means of participating in CRDI activities across the country
- Ensuring that the format and content of the theme documents support and reflect desired changes in curriculum policy
- Identifying relevant references, resources, resource people, and models at the national and international levels.

The membership of the advisory committee spans the country and includes members from various levels of the education system with experience in curriculum research, change, and implementation.

#### **b. Education for Sustainable Development - International Survey**

Many countries have been making changes in education policy in recognition of the importance of education and sustainable development. In a number of instances a multinational approach to education for sustainable development has been taken.

To gain from the experience of other nations, LSF has surveyed relevant jurisdictions to assess the educational responses at the regional, national and supra-national levels for activities. The survey has identified:

- i. Jurisdictions that have formally adopted sustainable development or its equivalent as a priority and expressed this prioritization through formal policy.
- ii. Jurisdictions that have delegated the response at least partially to education in order to assist their citizens to respond to current sustainability challenges
- iii. Actions that education ministries have taken to assist their populations in preparing to meet sustainability challenges.

Where no reference to sustainability or sustainable development existed, environmental policy was reviewed.

A summary of the international survey has been prepared by LSF as part of this initiative. *Education for Sustainable Development: International Survey of Policy and Practices* provides practitioners in Canada with a summary of relevant experiences in other countries.

### **c. Curriculum Review, Development, and Implementation (CRDI) across Canada-Current Practices and Opportunities for Participation**

LSF recently reviewed the state of Curriculum Review, Development, and Implementation (CRDI) across Canada to prepare the report, *Curriculum Review, Development and Implementation in Canada: Current Practices and Opportunities for Participation*.

It provides:

- Review of curriculum policy and its impact on instruction
- The Policy Change Process: CRDI across Canada
- The CRDI cycle and its stages
- Goals of ESD at the Review and Development Stages
- Means of Participation
- Summary of CRDI status in each jurisdiction for the 2005/06 and 06/07 school years.

A thorough awareness and understanding of the CRDI process in each province including: formal and informal means of participation, subjects under consideration, relevant time lines, and ministry of education contacts, is essential in the effort to reorient curriculum to reflect ESD perspectives.

-position as a sidebar

***Ontario's Curriculum Review Process-Science and Technology, Science, and Technological Education***

*During the 2005-2006 school year Ontario's Ministry of Education will review the Science and Technology Grades 1-8, Science 9-12, and Technological Education 9-12 curricula. Technical analysis teams consisting of educators from across the province will begin the review in November, 2005. In July 2006, writing teams will modify the existing curricula to reflect what has been learned through the review process. The eight month window from November 2005 to June 2006 will provide a number of opportunities to support this initiative.*

**d.  
Statu  
s of  
Educ**

**ation for Sustainable Development across Canada**

In 1999, Manitoba conducted a survey of ESD across Canada for The Council of Ministers of Education, Canada. The results were published in a document entitled “*Educating for Sustainability: The Status of Sustainable Development Education in Canada.*”

In 2007 LSF will update this work to determine the changes that have taken place in the intervening period.

#### ***Status of ESD in Manitoba***

*In Manitoba Education, Citizenship, and Youth’s 2000 document, “Education for a Sustainable Future: A Resource for Curriculum Developers, Teachers and Administrators”, education identified the importance of leading youth toward decision-making in creating a sustainable future. With its’ formal recognition of ESD and identifying staff from the Ministry of Education to promote ESD, Manitoba has become Canada’s leading province in recognizing Education for Sustainable Development. In keeping with the UN Decade, Manitoba is currently creating an Education for Sustainable Development working group in order to “foster the creation of a culture of ESD in Manitoba.” The Working Group will bring together “ leaders from provincial Ministries, federal government, formal, informal and non-formal education sectors to support regional coordination, development and implementation of ESD policies, curricula, materials/resources, and teacher education.” (MESDWG Discussion Paper and Implementation Process, 2005)*

## **4. Development Phase**

### **a. Provincial Working Groups**

In preparation for implementation of the theme documents through the CRDI process in each province, LSF will establish provincial or regional working groups. Currently the Manitoba Working Group is being formed to assist in the process of re-orienting curriculum policy to include the insights gained from the theme document research. Formation of additional working groups will follow based on the experience in Manitoba.

A sense of community in school is associated with positive attitudes toward school academic, motivation, and engagement.

*Educational Leadership, September 2005 (7)*

### **b. Instructional Methods and Education for Sustainable Development**

Some instructional methods and ways of organizing learning provide more support for students to be active citizens and to make positive contributions to solving environmental, social, and economic challenges. *Instructional Methods and Education for Sustainable Development* identifies these practices and specifies the instructional tools that are emerging as the best means of educating future citizens.

### **Service Learning**

*Through this approach learning takes place in the context of students providing volunteer service to the community. Students are first prepared for the community placement/service component. During and following the service experience, students engage in reflective thinking activities, an important feature that differentiates service learning from community service. Service Learning has been identified as one of the few instructional tools that increase a student's sense of community. Highly motivational, service learning has been shown to reduce dropout rates and improve the desire to learn. It provides real world opportunities to consolidate and apply learning from the core subject areas.*

### **c. Theme Documents**

For each of the twelve themes, a reference document will be created based on our current understanding of the essential concepts that need to be addressed and the best means of instruction. Each theme document will be fully referenced and will identify the fundamental concepts, skills, and values that are developmentally appropriate at each of four levels: Kindergarten to 3 (ages 5 to 8), grades 4 to 6 (ages 9 to 12), grades 7 to 9 (ages 13 to 15), and grades 10 to 12 (ages 16 to adult).

Fortunately much work on these themes has been carried out. However, it needs to be identified, analyzed, and organized to be most effective for use in the CRDI process. Theme content identified from the educational research literature will be reviewed by theme experts from outside the educational community in order to ensure that curriculum policy is consistent with what theme experts have identified as essential knowledge for citizens.

Additionally, exemplary programs that use identified instructional tools most appropriate for education for sustainable development will be described. Important learner misconceptions will be also listed and relevant classroom level instruction and curriculum design notes will be included. A sample theme has been prepared for the theme ***Energy and Its Use***.

To ensure maximum utility the theme reference documents will:

- Be organized by grade groupings commonly used in curriculum policy
- Provide insights into interdisciplinary instruction for the theme and age level of the students.
- Use common educational terminology.

In the preparation of all themes, it is essential to address current realities based on the need to ensure that citizens understand underlying causes and influences. For instruction with students however, it is vital to ensure a positive emphasis on options and solutions available to meet current and future challenges. A hopeful overview or map to a better world must pervade the work of learning with students.

## **5. Implementation Phase Initiatives**

The implementation phase of this initiative begins upon completion of each of the theme documents and includes:

- Maintaining contact with relevant CRDI staff in provincial ministries or departments of education in each province in order to stay up to date with curriculum policy change activities.
- Reviewing curriculum policy documents including identifying strengths, weaknesses, and offering specific suggestions for change (including submissions to ministry of education officials and liaison with relevant teacher subject associations).
- Promoting awareness and participation in the CRDI process in each province amongst relevant government ministries and agencies, non-governmental organizations, and corporate sector members with interests in any of the themes.

The cycle of change in curriculum policy in any provincial jurisdiction has active and inactive phases. During formal ministry reviews and development, direct communication with relevant ministry education staff and other educators will occur. When curriculum policy is being implemented in schools however, involvement with ministries of education will be significantly decreased. At these times other activities will take place and may involve teacher professional development, supporting learning resource producers such as textbook publishers, and supporting groups involved in learning program design and delivery.

## **6. Project Time Lines**

Curriculum policy change is a long-term, ongoing endeavor. Results from the work of this project at the curriculum policy level are not expected for three to five years, with a five to ten year time frame being reasonable in cases where formal reviews have recently taken place.

Some degree of curriculum review is currently taking place in most provinces and territories. Preparation of theme documents is a complex undertaking requiring considerable research. Nevertheless, in order to take advantage of upcoming CRDI opportunities, the following targets have been set for document completion as part of this initiative:

#### October 2005

- Canadian Sustainability Curriculum Review Initiative: Rationale, Context, and Scope
- Sample Theme: Energy and Its Use
- Establish National Advisory Committee

#### November 2005

- Education for Sustainable Development –International Status -research
- Curriculum Review, Development, and Implementation (CRDI) across Canada-Current Practices and Opportunities for Participation -research
- Prepare Communication plan
- Theme research initiated (Food and Agriculture, Biodiversity, Ecosystems, Citizenship and Governance, Climate Change)

#### December 2005

- Ways of thinking research

#### Ongoing 2006

- Initiate Implementation, Energy - Ontario Science and Technology Curriculum Review
- Instructional Methods and Education for Sustainable Development –research
- Additional Theme Research (six additional themes)

#### March 2007

- Status of Education for Sustainable Development across Canada

## 7. Acknowledgements

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## 9. Appendices

### Appendix A. Key Action Theme Descriptions

**Biodiversity:** Biodiversity, the variety of life on Earth and the natural patterns it forms, creates the web of life of which we are an integral part and upon which we depend. Human impact threatens individual species and all those living things that depend on the interaction of life forms.

**Climate Change:** The harmful impact of climate change is of worldwide proportions. To limit damage to the atmosphere requires awareness and action from the individual to international levels.

**Ecosystems:** The interactions of individual components of every ecosystem results in an effect that is greater than the sum of the individual parts. All aspects of society and economy are dependent on ecosystems and their functions.

**Energy:** Most of the world currently depends on non-renewable fossil fuels to heat homes, operate transportation systems and drive the economy. Meanwhile significant portions of the world's residents do not have the luxury of a single light switch. Both ends of this energy use spectrum challenge the environment's capacity to absorb the results of human energy use.

**Economics and Sustainable Consumption:** Sustainable lifestyles and ways of working are required to overcome poverty and protect the natural resource base for all forms of life. Understanding how economic practices interact with environmental and social dimensions is required.

**Food and Agriculture:** A healthy environment provides humans with the food needed to sustain healthy populations. Current practices and dependencies challenge this capacity requiring that sustainable food production be achieved without compromising other environmental functions.

**Governance, Citizenship, and Community:** The full participation of citizens in decision making as part of transparent government structures and processes provides the best context for addressing sustainable development challenges.

**Human Health and the Environment:** Healthy individuals are dependent upon healthy environments, both important pre-conditions for sustainable development.

**Indigenous and Local Knowledge:** Local and Indigenous Knowledge, including language, naming and classification systems, resource use practices, ritual, spirituality and worldview, are an important resource in achieving sustainable practices.

**Peace and Human Security:** Skills and values for peace and human rights enable people to live with human dignity and avoid insecurities and conflicts that undermine sustainable development.

**Sustainable Urbanization and Transportation:** Cities pose threats to sustainability but also offer opportunities to address the challenges faced by both urban and rural citizens. With more than half the world's population located in urban areas, cities are the context through which many social, economic and environmental challenges will be met.

**Water:** Freshwater is a critical component of ecosystems and a crucial human resource. Awareness and management challenges are critical environment and development issues.

## B. Project Product Map

Project Elements: **Canadian Sustainability Curriculum Review Initiative**  
*Learning for a Sustainable Future*

Context Document	Supporting Documents	Themes	
	Education for Sustainable Development –International Status	<i>Biodiversity</i>	
Canadian Sustainability Curriculum Review Initiative  Rationale, Context, and Scope	Status of Education for Sustainable Development across Canada	<i>Ecosystems</i>	
	CRDI across Canada-Current Practices and Opportunities for Participation	<i>Energy and Its Use</i>	
	Instructional Methods and Education for Sustainable Development	<i>Economics and Sustainable Consumption</i>	
		<i>Food and Agriculture</i>	
	Implementation Plan	<i>Governance, Citizenship, and Community</i>	
	Communications Plan	<i>Indigenous and Local Knowledge</i>	
	Ways of Thinking Resource Documents		<i>Human Health and the Environment</i>
			<i>Peace and Human Security</i>
	Theme Document Framework and Definitions		<i>Sustainable Urbanization and Transportation</i>
			<i>Water</i>

## C. Energy and Its Use, Sample Theme

### 10. Endnotes

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<sup>i</sup> Research from a number of perspectives has converged to support this approach. See Leithwood et al, Teaching for deep understanding 2004; Jensen, Teaching with the brain in mind, 2005, Smith, M. K. (2002) 'Howard Gardner and multiple intelligences', *the encyclopedia of informal education*, <http://www.infed.org/thinkers/gardner.htm>. Last updated:

<sup>ii</sup> The term Ways of Thinking has been used here to capture an aspect of organizing learning that is evolving from a number of areas. In *Benchmarks for Science literacy* (AAAS), the term Common Themes is used to describe ideas that are important and span disciplines. These include Systems, Models, Constancy and Change, and Scale. *A Guideline for Learning* (NAAEE) refers to Essential Underpinning as the core or key principles that inform its approach to education. These include: Systems, Interdependence, Importance of where one lives, Integration and Infusion, Roots in the real world, and Lifelong learning. While the Ontario Ministry of Education, in a recent document, has used the term Fundamental Concepts.

We have initiated work to identify those Ways of Thinking that are particularly relevant to ESD and in turn curriculum design. Although there has been much discussion of the various Ways of Thinking, their application has been inconsistent, possibly due to the lack of clarity in this area of educational discourse. In working to define and promote ESD in curriculum design, this project will explore this area further.

<sup>iii</sup> See endnote i.

<sup>iv</sup> The UN Decade for ESD has identified this as a vital practice to ensure that progress is made. “An initiative as long and as complex as a Decade must put in place adequate processes of monitoring and evaluation from the start. Without that, it will be impossible to know if the Decade is making any difference and what that difference is. **A key aspect of monitoring and evaluation will be the identification of suitable, relevant and measurable indicators at every level – local, national, regional and international – and for each initiative and programme.** As the Decade puts major emphasis on cooperation through the integration of ESD concerns into existing networks and alliances and through the creation of new ones, each grouping should set up its own objectives, outcomes and indicators within the Decade framework.”

<sup>v</sup> See endnote i.