



United Nations
Educational, Scientific and
Cultural Organization



United Nations Decade of Education for Sustainable Development
(2005-2014)

Exploring Sustainable Development: A Multiple-Perspective Approach



Education for Sustainable Development in Action
Learning & Training Tools N°3 - 2012
UNESCO Education Sector

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U N E S C O

Education for Sustainable Development in Action
Learning & Training Tools N°3

2012

Published by the United Nations Educational,
Scientific and Cultural Organization
7, place de Fontenoy, 75732 Paris 07 SP, France

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Developed in the context of the UNESCO Intersectoral Platform on Education for Sustainable Development by an intersectoral group of colleagues from the Education, Natural Sciences, Culture and Communication sectors, in collaboration with the International Hydrological Programme.

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Final version prepared based on the results of pilot testing of the Multiple Perspective Tool through UNESCO Hanoi, UNESCO Kingston and UNESCO Windhoek.

Main target audience for this tool: secondary school teachers

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ED/PSD/ESD/2012/PI/1

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I. The Multiple-Perspective Approach

1. Multiple-Perspective Approach and Education for Sustainable Development

The United Nations Decade of Education for Sustainable Development (DESD) signalled a new purpose for education. This purpose, articulated in the Bonn Declaration, is that “education should be of a quality that provides the values, knowledge, skills and competencies for sustainable living and participation in society and decent work” (UNESCO, Federal Ministry of Education and Research, & German Commission for UNESCO, 2009, p. 118). Sustainable development addresses the interdependencies between social, economic, cultural and environmental dimensions of life. Education for sustainable development (ESD) is education, which promotes the balancing of economic growth, environmental conservation, cultural diversity and social well-being in a way that is inclusive of marginalized populations and attends to gender issues (UNESCO, Federal Ministry of Education and Research, & German Commission for UNESCO, 2009).

The ability of educational institutions to respond to the complex expectations embedded in ESD can be enhanced through a multiple-perspective approach to teaching and learning. A multiple-perspective approach promotes interdisciplinary and intercultural competencies as it addresses challenges to local or planetary sustainability. Interdisciplinary thinking, in which concepts and knowledge from different academic traditions are used to analyze situations or solve problems, allows students to use knowledge in new and creative ways. "Intercultural dialogue contributes to sustainable development by facilitating knowledge exchange - traditional, local, and scientific. Through combining all these valuable forms of knowledge, more sustainable practices can be developed and better resolutions to current issues may be achieved" (Tilbury & Mulà, 2009, p. 7).

Ways of thinking are vital to a multiple-perspective approach to ESD, including systems-thinking, intergenerational responsibility, protection and enhancement of shared natural resources, awareness of driving forces, and taking on strategic responsibility (McKeown & Hopkins, 2009; Gallagher & Hogan, 2000).

Central to sustainable development are people’s values, worldviews, knowledge and creativity, which are inextricably linked to culture. Sustainable development theory recognizes cultural diversity as a rich source of innovation, human experience and knowledge exchange which can assist communities and societies to move to more sustainable futures. It also acknowledges the importance of cultural diversity as a means to build a culture of peace, tolerance, non-violence and human fulfilment (UNESCO, 2004)[sic]¹. (Tilbury & Mulà, 2009, p. 2)

Education for sustainable development calls for a multiple-perspective approach.

2. Multiple-Perspective Approach in the World of Work

The world of today is complex. Although the world has advanced tremendously in the last half century in technological terms and in the creation of wealth, many inequities and problems persist and in some cases are getting worse. For example, ecosystems are eroding and the gap between the “haves” and the “have nots” is growing. The decline in some cases seems unstoppable using current knowledge-base and proposed solutions. The task of creating a more sustainable world characterized by environmental integrity, social equity, cultural diversity and economic justice is immense. Such a future will require the citizens and leaders of today and tomorrow to be able to understand complexity and work with complexity. This Multiple-Perspective Tool is designed to help secondary students of today to do just that – to understand and work with complexity.

¹ In references as UNESCO, 2005c

In the work world of today (e.g. in governments, NGOs, international agencies and corporations) the trend is to form teams of people to work on large projects, complex problems and seemingly intractable situations. As one examines the composition of these teams, the multi-disciplinary nature becomes evident. For example, engineers work with cognitive scientists and physiologists to design an instrument panel for an aircraft. In an international agency, it is typical to have a political scientist, an educator, an economist, a biologist, a communication specialist, an anthropologist and a gender specialist working on a community development project. Each member of these teams brings not only disciplinary knowledge to the team, but also brings the perspectives and insights that come with the study and the practice of a discipline. More importantly, each team member asks questions that stem from their different disciplines. Also each team member collects different information about the central topic and analyzes it. The results of these types of multi-disciplinary and multi-perspective teams are impressive (e.g. new technologies are designed and long-standing community problems resolved). Team members report that their success is greatly based on the complementary knowledge and skills of the entire team. The Multiple-Perspective Tool is designed to help secondary students of today to work in multi-disciplinary and multi-perspective teams.

While multiple-perspective approaches and teams are applicable to the world of work, the requirements of a secondary classroom are related to mandated curriculum, the schedule of the school day and the duration of the academic year. The Multiple-Perspective Tool is intentionally designed to be flexible so that it can be adapted and implemented within a variety of school settings.

3. Multiple-Perspective Approach in Schools

People often hold different points of view regarding an event or challenge² depending on their worldview³, gender, socio-economic status, level of education, sense of self-efficacy, access to resources, religion, rights granted by law, etc. Understanding another person's or another group's point of view helps people, communities and nations to live more peacefully and work together to create a more sustainable future. Understanding a point of view other than your own takes knowledge, skills, perspective and values. Developing these four also takes practice – learning to apply and transfer these four from one topic to another.

Multiple-perspective analysis helps students to understand the points of view of others who live in their community or across the world. Multiple-perspective analysis deals with difficult questions of power, money, resource distribution and conflict of interest. Such questions have complex answers. Also, multiple-perspective analysis is a changing undertaking. For example, a person's point of view may change depending on whether or not an issue indirectly or directly impacts her/his life. To illustrate this let us imagine a person who does not think about where the garbage goes when s/he tosses it out and it is hauled away. Now imagine the level of interest and concern of this same person when the municipal government announces it plans to locate a landfill or garbage incinerator adjacent to this person's home.

Pupils arrive at school with a sense that some things are not right in life. Many have observed or experienced inequities as well as seen them on television. Multiple-perspective analysis will help them understand their concerns and the environmental, social and economic causes and consequences of the inequities. Controversial issues arrive in the classroom from the surrounding world. In previous decades, teachers were taught to smooth controversy in the classroom and not to waste valuable class time enmeshed in contentious and complex topics that had no clear solutions. The classrooms of today are different.

² The phrase event or challenge is used in this document to refer to events, problems, issues, situations, challenges, etc. with which local communities and the planet grapple. These events and challenges often threaten sustainability in terms of environment, society, culture and economy, singly and in combinations.

³ Worldviews are coherent understandings of the "nature of reality" (e.g. the surrounding world), which permit individuals or groups to interpret new information. Worldviews are underlain by empirical (e.g. science or economics), transcendent (e.g. religious, philosophical, spiritual, and theological), affective (emotional) elements or some combination of these ways of thinking and knowing. Differences in worldview lead individuals to ascribe different meanings to the same event.

The Multiple-Perspective Tool seeks to assist teachers to meet new expectations. Teachers and their students require tools and frameworks for thinking about complex issues. Such tools and framework help them untangle the complexities of sustainability issues and create solutions that are locally appropriate while being mindful of global consequences (e.g. cleaning up local pollution without shipping toxic and hazardous waste to another country).

In a few years the students of today will become voters and some will assume positions of leadership. In these new roles as adults, they will have to deal with complex issues that have no apparent answers. They will have to learn their way forward to create a more sustainable world. Having multiple-perspective analysis skills and tools will help them assume their new roles.

II. The Multiple-Perspective Tool

Teachers can elect to use one, a few, or all the perspectives presented here within one lesson. Teachers know their students, their abilities and the communities in which they teach. Each classroom presents a unique combination for which teachers create specific lessons. One teacher for her class may choose to introduce the perspectives individually and let students apply each perspective by itself. Another teacher for his class may choose to introduce all of the perspectives at once and have small groups of students apply one perspective each to a common case study.

The Multiple-Perspective Tool can be used on case studies or products of the media, such as television documentaries or feature articles in news magazines, etc. In these assignments students can use the questions in the eight perspectives to guide their work. For example, students can explore their local community by reading newspaper articles and talking to people in the community to answer questions in the eight perspectives.

As students gain experience with multiple-perspective approach, using the Multiple-Perspective Tool will become easier. What they learn from one topic will inform their work in the next topic.

1. Teaching with a Multiple-Perspective Approach

One element of ESD is for students to develop the knowledge, skills and attitudes to support viewing and analyzing events and challenges from their own perspective as well as the perspectives of others, whose lives are currently touched or will be touched by proposed solutions.

Although many perspectives exist, the following eight unique, yet complementary, perspectives were specifically selected because of their importance for understanding the complexity of the world today, for understanding long-standing global inequities and problems, and for their appropriateness for secondary students.

Scientific perspective – Science is a systematic and logical way of knowing about the world around us. The scientific perspective is understood internationally.

Historical perspective – History records the changes in the world over time; it examines the past to inform actions of today and the future.

Geographic perspective – Events, problems and issues take on different complexities when viewed from small to large geographic and temporal scales.

Human rights perspective – The Universal Declaration of Human Rights unequivocally states that all humans are to be afforded certain rights including, but not limited to, life, liberty and security of person as well as the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care, and necessary social services.

Gender equality perspective – Men and women as well as boys and girls often have different roles in life, which are to be equally valued.

Values perspective – The values that individuals, cultures and countries hold influence decisions on a personal level and on a national level.

Cultural diversity perspective – Each person brings worldviews and cultural traditions that help bind the individual to a specific cultural group. In a world where mobility is increasingly common and easy, people of different cultures are crossing paths and living closely together.

Sustainability perspective – Sustainability balances environmental, social, and economic concerns, and focuses on the future to assure the well-being of upcoming generations.

2. Description of Perspectives and Classroom Application

Suggestions for instructional strategies are offered to help classroom teachers adapt and implement a multiple-perspective approach for a wide range of sustainability issues.

2.1. Scientific Perspective

Science is a way of knowing; it is also a process that formulates and answers “testable” questions. The resulting answers must be repeatable (i.e. the results of an experiment done at one time and place, can be duplicated at another time or place). Science is also a body of knowledge that can be logically and rationally explained. Science for many secondary students is based on developing and using basic science process skills (e.g. observing, measuring, inferring, classifying, predicting and communicating) as well as integrative science process skills (e.g. formulating hypotheses, identifying variable, designing investigations, experimenting, analysing data, and formulating models). Science helps students learn to think in logical ways that are internationally accepted within the scientific and academic communities. Science helps student to recognize personal biases and to learn to step away from cultural, local and personal contexts to assume a more remote and “objective” positionality or point of view.

Although the term science is often associated with the natural and physical sciences, it also refers to the social sciences, which are also grounded in empirical data and ways of thinking. Science answers questions such as how does something work, how did something happen, and how likely it is to happen again. Science is separated from other ways of knowing, such as religion that answers other questions, like why was the universe created?

Why is this perspective important?

To society:

- Much contemporary problem-solving relies on empirical evidence and methods of analysis. Many advances in modern civilizations (e.g. technology, medicine and transportation) have been created through scientific approaches.
- Using a scientific perspective is a “learning to know” skill.

To students:

- Part of using a science perspective is to enlarge students’ perspectives beyond their daily life experiences and to connect them to a way of thinking that is used by people around the world and across centuries.
- Using a scientific perspective in the classroom encourages critical and analytical thinking and evidence-based interpretations of data.

How can we include this perspective in teaching and learning?

- Through using science process skills, (e.g. measurement, use of tools, observation, inference, analysis, speculation, graphing, data collection and research design).
- Through doing science (designing and carrying out research projects).
- Through the critique of the processes used by others and their results. Are they scientific? Are the results reasonable?

What kinds of questions encourage a scientific perspective?

- What answerable question(s) can be asked about this topic?
- What information does one need to answer this question(s)?
- What information is already available? How reliable is it?
- What information can be collected individually or locally?
- How can that information be collected? Could others collect the same information by using the same method?
- How would the information be analysed so patterns or trends can be identified?
- How could the findings be communicated with others?

2.2 Historical Perspective

History is the discovery, collection, organization, interpretation and presentation of information about past events. History uses narrative to describe sequences of events or individual events of the past to investigate the causes and effects of those events. Additionally, history provides a perspective on the problems of the present. In fact, the philosopher Santayana, wrote, *"Those ignorant of history are doomed to repeat it."*

A historical perspective considers past events as resulting from interactions of humans (i.e. individuals and groups). History is often studied in specific time periods (e.g. Middle Ages or contemporary). History often involves elements of other disciplines such as geography and includes the context of the place (e.g. terrain and natural resources). History studies both the decisions of rulers and governments and the strategies and institutions of ordinary people coping with life.

This description of the historical perspective is brief because history is a core discipline in secondary schools around the world and students and teachers are already familiar with it.

Why is this perspective important?

To society:

- To be able to make broadly informed decisions in the world of today, by appreciating the events of the past, including causes and reasoning behind the decisions that lead to those events.
- To create a more sustainable future requires that citizens and leaders think about a future that is informed by the past.

To students:

- The study of history reveals both continuity and change, which persist beyond the lifespan of individuals or even generations. Therein, students can recognize that contemporary decisions will probably have long-term consequences.
- Student can see that skills of leaders, such as the ability to negotiate, compromise, attend to the needs of the people, and communicate with allies and enemies have shaped history.

How can we include this perspective in teaching and learning?

- Explore the history of the local community. What decisions were made decades or centuries ago that still affect life in the community today?
- Acknowledge roles and influences of key individuals and groups in history and contemporary society.
- Connect historic and contemporary decision-making with societal values and practices.
- Highlight interactions between people with different worldviews.
- Consider changes over time of worldviews and resultant decisions.
- Identify periods of stability and change. What led to stability and change (e.g. environmental conditions or human migrations)?
- Consider events (past and current) from the multiple points of view of people of different stations in life immediately involved in an event. Why is there great variation in these points of view? Which options for action derive from the various points of view?

What kinds of questions encourage a historical perspective?

- Has this event or challenge occurred in this community any time before now?
- Has this situation or issue occurred before in global history?
- What were the main causes of this situation or issue in the past?
- What was the outcome of the situation or issue?
- What decisions led to the outcome?
- Were these decisions based on an assumption(s) or particular worldview?
- Do these assumptions or worldviews persist today?

2.3 Geographic Perspective

Geography is a broad discipline that bridges the natural and social sciences. For the Multiple-Perspective Tool, geography contributes analysis of spatial distribution. Geographers often use maps of different scales to study phenomenon on local to global levels. This practice is called multiple-scale analysis; it is also carried out on time scales. The geographic perspective is concerned with spatial and temporal relationships between events and processes (McKeown-Ice & Dendinger, 2008). Spatial relationships exist between local conditions and the global phenomena that drive or cause them. The temporal perspective is a systems-thinking view, which recognizes that phenomena occur across multiple time scales, some events occurring in a matter of seconds or minutes, while other events occur over millions of years (Kok, Patel, Rothman, & Quaranta, 2006).

Events (natural and human-caused) or challenges take on different complexities when examined at a local scale, national scale or international scale. For example, a community without a recycling plant desiring to get rid of electronic waste (e-waste) may decide that paying for it to be hauled away is a good decision. However, when viewed from an international perspective, the impacts and consequences of the decision could be horrible. If the recycler pays a small price to dump the e-waste in a developing country, then all of the problems associated with e-waste (e.g. toxic materials and blight on the landscape) would be transferred to another community – one that has even fewer resources to deal with this specialized waste. Of course, one of the intents of ESD is that communities would demonstrate global solidarity and find solutions that lead to the common good for all humans and ecosystems.

Why is this perspective important?

To society:

- This perspective supports decision-making that does more than create local or short-term solutions.

To students:

- This perspective supports cognitive skills to think spatially and across time.
- This perspective helps students understand the interconnectivity of the events and challenges within their own lives and communities with those of other places distant from themselves.
- This perspective helps students to deal with seeming contradictory statements about events and challenges in their communities and in the world. What seems a benign and isolated event in the local community, if repeated could be a disturbing national or global trend. For example, a neighbour discovers a weed in her garden – the first of its kind that she has seen. She thinks little of it. However, maps of exotic plant invasion show that this noxious weed has spread all through the southern portion of the country where it has proven expensive to control. Farmers spend hours weeding and have resorted to herbicides to kill it before it damages their crops and familial income. The herbicides are contaminating soil and water. The first occurrence alone without spatial and temporal analysis could not foretell future hardship.
- This perspective helps students to see global trends and patterns.

How can we include this perspective in teaching and learning?

- By providing maps of different scales and globes for the students to explore.
- To use timelines – both teacher-made and student-made – to illustrate when events take place in relationship to one another.
- To provide students with facts from publicly available databases and outline maps to match the geographical unit in the database. Students make maps that are visual representations of the database.
- To provide student with the opportunities to synthesize their knowledge and illustrate it thereby communicating graphically.
- To give students the opportunity to discover spatial and temporal trends and patterns.

What kinds of questions encourage a geographic perspective?

- What is the geographic scale of the event or challenge?
 - Does it cover a few square kilometres or thousands of kilometres?
 - Has the scale of the event or challenge changed within recent history (e.g. the last 20 years?)
 - Is the geographic scale predicted to change (e.g. grow larger)?
- What is the spatial distribution of the event or challenge?
 - Is it found in isolation or repeated in other places?
 - Does it follow a pattern (e.g. along rivers, on seacoasts or in tropical forests?)
 - Has the spatial distribution of the event or challenge changed within recent history (e.g. last 20 years)?
 - Is the spatial distribution predicted to change (e.g. leap over a geographic barrier such as a mountain range)?
- What is the time scale of the event or challenge?
 - Has it been with the community for generations (e.g. recurring natural disasters like hurricanes or earthquakes)?
 - When was it first observed?
 - Is it increasing or decreasing in frequency?
 - What is its predicted longevity (e.g. a half-life of 20,000 years or decomposition within 20 years)?
 - Does it affect young, middle-aged and old in the same way?
- What are the impacts of the proposed solution?
 - What is the local impact?
 - What is the state/provincial impact?
 - What is the national impact?
 - What is the global impact?
 - Does the proposed solution lead to the common good of all people and ecosystems?

2.4 Human Rights Perspective

Human rights are basic rights and freedoms to which all people are entitled regardless of nationality, sex, age, national or ethnic origin, race, religion, language, or other status. Human rights are universal and egalitarian, with all people having equal rights by virtue of being human. These rights may exist as inalienable rights (i.e. self-evident and universal, also called natural rights) or as legal rights, in both national and international law. The Universal Declaration of Human Rights was adopted by the United Nations General Assembly in 1948.

Human rights perspective is based on the premise of equality of all – for men and for women, for rich or poor, all races and ethnicities, the young and old, those with voice and those who are voiceless, and those who have political power and those who are disenfranchised. A human rights perspective asserts that fundamental and universal needs go beyond the basics of food and shelter, and also include the needs of health and happiness, clean water, clean living conditions, and access to resources, including education and the legal system.

The fulfilment of human rights in countries around the world takes many different forms.

Why is this perspective important?

To society:

- Applying a human rights perspective helps to build empathy and human capital, by valuing each individual.

To students:

- To encourage all children to fully participate in school and in life, building respect for all, and encouraging dialogue and understanding among and across diverse groups.
- Students can identify if their own rights or those of others are being violated.

- As an outcome of instruction, students should be able to demonstrate respect for all cultural and societal practices that are consistent with individual human rights and basic needs.
- Students develop empathy for others who are different.

How can we include this perspective in teaching and learning?

- Read the Universal Declaration of Human Rights. Ask students to identify those articles that they did not know were human rights.
- Identify basic needs of all humans and recognize that not all people have equal or equitable access to resources (e.g. food, drinking water, sanitation, education, freedom of movement and speech, vaccinations and other health care).
- Incorporate stories of diverse groups of people, the universality of needs for resources, including physical, emotional and societal.
- Identify conflict that arises from restricting the rights of others.
- Identify conflict that arises from attempts to ensure human rights.

What kinds of questions encourage a human rights perspective?

- How do people, both men and women, of all walks of life have opportunities to express their opinions and preferences related to community events and challenges?
- How do local and national governments provide all people⁴ equitable access to natural, economic and social resources?
- How are human rights of some people restricted or neglected? What is the result?
- Is there a pattern to the restriction or neglect of human rights?
- Has conflict arisen due to restriction of human rights or to trying to assure human rights? If yes, where, when and why?
- What policies affect people's access to education, health care or work opportunities? Are these policies the same for people of all genders, ethnicity, race, age or socio-economic status?
- What evidence is there that events or challenges differentially limit the expression of cultural practices or values by members of the community?
- How can the community leaders ensure respect, protection and fulfilment of the universal rights of all members of the community through the existing or proposed solutions to sustainability events or challenges?
- In your community, what would be the consequences to individuals over their lifetimes if they do not have access to a free education?

2.5 Gender Equality Perspective

A gender equality perspective acknowledges the important role that gender plays in many societies, while also encouraging students to speculate about the possibilities for women's and men's contributions to society beyond traditional roles.

While women/girls and men/boys play different roles, they should be valued equally. Both women and men should be treated with respect and dignity. Opportunities for education, work and contributions to society should be determined by the person's attributes, not by gender.

Gender roles, considered to be socially constructed, specify the socially and culturally prescribed roles that men and women are expected to follow. Formed during the socialization phases of childhood and adolescence, gender roles are learned, vary between and within cultures, and can change over time. They may affect interpersonal relationships, work and professional opportunities, and access to resources, including education. Although gender equity is an ideal of the United Nations, gender discrimination persists in the world.

⁴ The term "people" and the term "member of the community" are used all through the document to lighten the text. The term is meant to be inclusive of all of the following groups: women, girls, men and boys. Therefore, it is expected that the reader systematically refers to all categories instead of considering "people" or "community members" as a homogeneous group, thus ensuring that the perspectives of everyone – regardless of their gender and/or age – are reflected.

Why is this perspective important?

To society:

- Women and men should be treated with respect and dignity, and their perspectives and contributions should be given equal recognition. Individuals should have autonomy and be protected under the law and should also live in environments that are free from gender-based discrimination.
- In decision-making, women and men should be represented equally and their perspectives should be given equal consideration. Opportunities for education, work and contributions to society should be determined by the person's attributes, not by gender.

To students:

- Teaching through a gender equality perspective encourages protection and respect for those who may be weaker under the law or according to traditional customs and beliefs.
- Respect for both genders encourages fuller participation in society by all students, male and female, and ensures that their perspectives are fully acknowledged and taken into consideration.
- To understand gender inequity and to recognize expressions of power, privilege and inequity related to gender in the local community and in countries worldwide.

How can we include this perspective in teaching and learning?

- By creating opportunities for leadership for girls and boys in the classroom and beyond, teachers can encourage respectful critique of traditional and contemporary gender roles and the likely context in which those roles were developed.
- By acknowledging the important role that gender plays in many societies, students are encouraged to value contributions from each gender, while also encouraging students to speculate about the possibilities beyond traditional roles. Women/girls and men/boys should have equally valued roles in society, although those roles can be very different.
- Students can also consider how long-standing use of resources and access to resources may have created the contexts for traditional societal contributions and gender roles. Students may consider, too, how advances in technology may have changed the context for gender roles (e.g. tractors have replaced the need for physical strength in completing agricultural tasks, such as ploughing

What kinds of questions encourage a gender equality perspective?

- Are there obstacles to women's or men's equal and full participation in discussion and decision-making regarding sustainability events and challenges? (e.g. family obligations, professional duties, legal constraints, societal norms, etc.)
- How do the goals and activities, related to sustainability events and challenges, meet the specific needs of all men and women, regardless of standard gender roles and behaviours?
- Do you think that a challenge or event affect women and men in the same way? If data were available what would they show? Use examples to support your answer.
- Would a woman view this sustainability event or challenge differently than a man? If so, how and why?
 - What are a poor woman's concerns?
 - What are a poor man's concerns?
 - What are a middle class woman's concerns?
 - What are a middle class man's concerns?
 - What are a rich woman's concerns?
 - What are a rich man's concerns?
 - How would a rural woman's perspective differ from an urban woman's perspective?
 - How would a rural man's perspective differ from an urban man's perspective?
- Are there opportunities for both men and women to feel equally empowered to make decisions on the personal level? If not, what are the challenges that need to be addressed?
- Do women and men have equal opportunities to influence provincial, state or national policies? If so, give some examples. If not, what would need to be changed?

- Do boys and girls experience the same levels of access to education, retention and success in literacy, giving them equal opportunities for full participation in community life and decision-making? Give some examples based on your experience.
- Do men and women have equal access to and control over the natural resources? If not, how would you address this?
- Does the final decision regarding an event or challenge fully take into account and address gender-related concerns? If so, provide examples of gender-related concerns that are generally taken into account. If not, which gender-related concerns should be taken into account?

2.6 Values Perspective

United Nations history carries with it a host of values related to human dignity, as well as rights, equity and care for the environment. Sustainable development takes these values a step further and extends them between generations. Understanding one's own values, the values of the society in which one lives, and the values of others around the world is a central part of educating for a sustainable future. Understanding values is an essential part of understanding an individual's own worldview and that of other people. Each nation, cultural group and individual must learn the skills of recognizing their own values and assessing these values in the context of sustainability (UNESCO, 2005c).

Values can be categorized in many different way, reflecting socio-cultural orientations (e.g. cultural, religious, social and ethical/moral), cognitive strengths (economic, scientific, health, ecological and educational), political orientations (power and dominance) or humanist orientations (e.g. beauty, recreational, egocentric, ethnocentric and well-being).

Why is this perspective important?

To society:

- Understanding one's own point of view and that of others is important to living in a community.
- Being able to identify the values of others is a "learning to live together" skill.
- Understanding that what people value most often underlies their opinions, desires, actions and concerns, helps people to live together peaceably.

To students:

- Understanding that competing values affect governmental, institutional and personal decisions for the allocation of resources (e.g. financial and human resources) can lead to great understanding of political and decision-making processes.
- Understanding that differences in values cause tension or conflict and that similarity in values can create common ground is useful for conflict resolution and collaborative problem-solving for citizens.

How can we include this perspective in teaching and learning?

- A values perspective provides a means for active listening. As students engage in participatory discussions or town councils, they can listen for evidence of each speaker's values.
- Students can role-play (i.e. imagine and act out) a community forum where stakeholders speak from different value perspectives concerning a specific community event or challenge. Each student would interpret and discuss the event or challenge in light of a particular value perspective.
- Students read and reflect on scenarios that involve ethical decisions. Students choose a possible response that is close to theirs and discuss it within a small group.

What kinds of questions encourage a values perspective?

- If you saw an old woman being discriminated against, how would you feel? What are the values associated with your feelings? Describe your values in regard to social equity? (This is a values clarification question that students ask of themselves.)
- How would you describe your values in regard to use of common resources of the community (e.g. water, green spaces and sunlight)? How would you describe your values in regard to privately owned

resources (e.g. farm or garden, woodlot or a well. (This is a values clarification question that students ask of themselves.)

- What diverse values are evident among the local community?
- What values underlie various political orientations?
- What groups of people in your community share particular values?
- What actions or events in your community have caused someone or some group to reconsider their values or change their opinions?
- What is a community example of conflict stemming from values?
- What is a community example of people finding common ground and working together? Was the common ground values based?
- How can societal and cultural values shape an ethos of sustainable consumption?
- What major social values (e.g. economic, ecological, political, spiritual) are involved in decision-making processes regarding sustainability issues?

2.7 Cultural Diversity Perspective

“Culture should be regarded as a set of distinctive spiritual, material, intellectual and emotional features of a society or a social group, and ... encompass, in addition to arts and literature, lifestyles, ways of living together, value systems, traditions and beliefs” (Preamble to UNESCO Universal Declaration on Culture as cited in UNESCO, 2001, p 18). Culture represents traditional and contemporary expressions of human achievement (e.g. language, art, tools, religious beliefs and practices, values, architecture, fables, traditions, customs and all other forms of human endeavours) that bind together groups of people. Culture is created through human-human interactions as well as through human-environmental interactions. People interpret the human-built and natural worlds through cultural perspectives. Culture also provides pathways of insight for groups to learn about each other.

Cultures evolve over time; especially as once distant cultures come in contact with one another. Such contact regenerates cultures across time and space. With globalization and accelerated cultural change, there is a concern that cultural diversity will diminish and languages, which are central to worldview and culture, will be lost.

Cultural diversity is as necessary for humankind as biodiversity is for nature. There is increasing awareness of the “inextricable link between biological and cultural diversity, and the recognition of the crucial role that it plays in sustainable development and human well-being worldwide” (UNESCO, 2007, p7).

Why is this perspective important?

To society:

- Cultural diversity enhances thinking and pathways to a more sustainable future.
- Knowing about other cultures helps people to learn to live together.

To students:

- Learning through cultural diversity helps students realize that each culture has unique assumptions and values, which help to form their worldviews.
- Learning through cultural diversity helps students identify the influence of their own culture and other cultures on their own daily life.
- Learning through cultural diversity enhances inter-cultural skills.

How can we include this perspective in teaching and learning?

- Study languages, art and stories about societal and natural resources to give an indication of how various resources are valued.
- Read folktales from different cultures that deal with themes common to all societies.
- View documentaries created in different countries to show diverse approaches that reflect the worldview of the dominant cultures.

What kinds of questions encourage a cultural diversity perspective?

- Who are the individuals from different cultural groups who can speak for the community?
- What were the relevant local or traditional forms of knowledge that applied to the event or challenge?
- Do key stakeholders vary within cultural groups pertaining to an event or challenge?
- What are existing conflicts that may become worse during times of change or stress?
- What are examples of tangible and intangible cultural heritage related to the event or challenge?
- How are local cultural resources enhanced, promoted or preserved by the event or challenge?
- What are the cultural assumptions, practices and values that relate to an event or challenge?
- How can community leaders from various backgrounds be represented and heard in the context of an event or challenge?
- Do decision-making processes take into account culturally specific perspectives of the local community as well as culturally specific social relations between various community groups?
- What are the positive aspects of diversity that can improve the event or challenge?
- How can various religious beliefs among community members be acknowledged through resolution of a community challenge?

2.8 Sustainability Perspective

A sustainability perspective represents balancing economic, social, cultural and environmental concerns in the pursuit of economic development, human well-being and ecosystem integrity. This perspective takes an intergenerational approach to ensure a good quality of life now and for future generations (e.g. projecting the needs of future generations and protecting natural resources now to meet those needs). It is future oriented while being informed by lessons of the past and by traditional knowledge. For all societies, wise use and equitable access of resources are critical to maintaining current standards of living and to ensuring a high quality of life for future generations.

The sustainability perspective involves thoughtful use of natural resources as well as social equity, cultural diversity and economic justice. Thoughtful use of natural resources includes ensuring that rates of human use of natural resources are within the limits of natural systems for cyclic replenishment, regeneration or recharge (e.g. cutting forests no faster than the trees can grow or pumping water from an aquifer no faster than it can recharge). The sustainability perspective also includes addressing the many social inequities in our societies associated with gender, race, ethnicity, etc. as well as the growing economic gap between the “haves” and the “have nots.” (e.g. approximately 1.2 billion people live on less than US\$1 per day). In adopting a sustainability perspective, students engage in: (1) critical thinking skills of analysis, synthesis and evaluation as they interpret data, (2) consider social and cultural practices and values, and (3) assess economic impact as they evaluate existing or proposed solutions or create new solutions to problems.

The sustainability perspective helps students to analyse complex problems with roots in environmental, social, cultural and economic realms. It helps students analyse proposed solutions and evaluate their potential outcomes and impacts – both positive and negative. It also helps students to create and evaluate solutions of their own.

*Why is this perspective important?**To society:*

- The ability to think about the future well-being of communities and the planet in concrete terms.
- To deal with complexity.

To students:

- Balancing environmental, social, cultural and economic interests and concerns is not an easy task. The sustainability perspective helps the students identify imbalances.
- Stimulate thinking and planning for the future.
- Using higher-order thinking skills to propose and evaluate solutions.

- Consider the local and global implications of over use (e.g. deforestation) and uneven use (e.g. hunger and starvation) of resources.
- To learn to unravel the complexity of events or challenges.

How can we include this perspective in teaching and learning?

- Through issue analysis or problem-based learning where students study a problem or issue in their community.
- By considering production and consumption patterns of developing and developed societies.
- By studying how resources are allocated through geographic, commercial or political mechanisms.
- Considering how choices about consumption can affect sustainability.

What kinds of questions encourage a sustainability perspective?

- How can human societies best utilize natural resources to assure continued long-term availability while also assuring an equitable standard of living for all members of society?
- How should current societal needs and wants be balanced with long-term availability of natural resources?
- What are possible economic implications of restricting immediate use of natural resources in exchange for the expectation of long-term availability of resources?
- What social inequities exist in the event or challenge?
- What economic inequities exist in the event or challenge?
- What kinds of information should community members analyse, synthesize and evaluate as part of decision-making processes related to the event or challenge?
- What criteria can be used to evaluate existing or proposed solutions or to create new solutions for an event or challenge?
- How can individuals make personal changes to create more sustainable lifestyles?
- How can groups of people make changes to create more sustainable societies?

3. Interrelationships between the Perspectives: A Holistic Approach

In the preceding sections, the eight perspectives were treated independently to help clarify the unique meaning of each one. Admittedly, the perspectives overlap. In the classroom, perspectives can be used together, applying several simultaneously or sequentially to achieve depth of understanding of an event or challenge.

The point of the multiple-perspective approach is to acknowledge that there are many sides, or perspectives, to understanding community events and challenges. To fully teach or learn about sustainable development, each of the four dimensions (environment, society, culture and economy) must be addressed, not just separately, but in relation to the other two dimensions. It is through understanding both the unique perspectives and the overlaps that solutions to problems, resolution of conflicts and paths forward to sustainability can be found.

An Issue Analysis Tool

1. What are the main historical and current causes (i.e. physical/biotic, social/cultural or economic) of the issue?
2. What are the geographic scale, the spatial distribution and the longevity of the issue?
3. What are the major risks and consequences to the natural environment?
4. What are the major risks and the consequences to human systems?
5. What are the economic implications?
6. What are the major currently implemented or proposed solutions?
7. What are the obstacles to these solutions?
8. What major social values (e.g. economic, ecological, political, aesthetic) are involved in or infringed on by these solutions?
9. What group(s) of people would be adversely impacted by or bear the cost of these solutions?
10. What is the political status of the problem and solutions?
11. How is this issue interrelated with other issues?
12. What is a change you can make or have made in your daily life to lessen the issue?
13. Beyond changes in your daily life, what is the next step you could take to address the issue?

Source: McKeown-Ice, R. and Dendinger, R. 2008. Teaching, learning, and assessing environmental issues. *Journal of Geography*, Vol. 107, pp. 161-166.

The human rights and gender equality perspectives provide the foundation to all other perspectives. These two perspectives represent the shared value system that underlies ESD. The human rights perspective addresses environmental, social and economic ethics and equity. All individuals,

regardless of their gender, should have equal voice in local and global decisions; all individuals should have access to food, water, education, shelter and other necessities to ensure health and opportunities for quality of life. The human rights perspective indicates respect for the universality of physical and social needs. Nevertheless, the persistent gender inequalities and power imbalances present all over the world show us that the ideas in the Universal Declaration of Human Rights have not been achieved.

Scientific and sustainability perspectives are closely related. Scientific inquiry in the natural and social sciences is needed to solve sustainability challenges. The scientific perspective draws upon knowledge and process skills, but often lacks local context. The sustainability perspective builds on the scientific perspective by adding contextual factors, including human impact, historical time, quality of life or economic impact. Both scientific and sustainability perspectives may share an action orientation, although that is not always part of the scientific perspective.

Gender equality, cultural diversity and historical perspectives are parts of a whole, with much overlap although each perspective has its own emphasis. Cultural diversity, the broadest perspective of these three, can be considered as the sum of expressions of human achievement. Cultural diversity could be viewed in terms of gender (Are the contributions of men and women to culture and society equally valued currently and in the past?) and historical (Has technology changed the use of natural resources over time?). These three perspectives as a group highlight the social, cultural and economic contexts of sustainability.

The values perspective is embedded within each of the other perspectives. The values perspective represents the awareness that individuals or groups may prioritize a single perspective in their own decision-making process and that perspective may not be held by others in the group.

The multiple-perspective approach provides a structure that educators can use to detangle the complexities of real-life situations. Every sustainability event and challenge has environmental, economic, cultural and social roots and implications for today and the future. As a result, every sustainability issue can be viewed and studied from various disciplinary points of view or multi-disciplinary points of view. Economics, culture, gender and human rights often have little meaning to students as formal academic subjects; however, when these points of view are applied to sustainability events and challenges that ultimately affect the quality of their lives and livelihoods, and the lives of others around the globe, a new relevancy for learning and doing can arise.

4. What is Missing?

After students have used one or more perspectives to study an event or a challenge, they will most likely have unanswered questions of their own. The following evaluation worksheet will help the students to take their understanding further.

Multiple-Perspective Tool Evaluation Tool for Student Use											
1. Which of the eight perspectives were helpful in understanding the case study (or other source of information)? <i>Circle all that apply.</i>											
Scientific											
Gender Equality											
	Historic										
	Values										
		Geographic									
		Cultural Diversity									
			Human Rights								
			Sustainability								
2. To what extent did this case study address: <i>Mark the one that applies.</i>											
	1 - not at all	2 - a little	3 - some	4 - a great deal	5 - fully						
Scientific perspective	1	2	3	4	5						
Historic perspective	1	2	3	4	5						
Geographic perspective	1	2	3	4	5						
Human rights perspective	1	2	3	4	5						
Gender equality perspective	1	2	3	4	5						
Values perspective	1	2	3	4	5						
Cultural diversity perspective	1	2	3	4	5						
Sustainability perspective	1	2	3	4	5						
3. Did you find answers to the questions in each of the eight perspectives? <i>Circle those that apply.</i>											
Scientific	1	2	3	4	5	6	7				
Historic	1	2	3	4	5	6	7				
Geographic	1 a b c	2 a b c d	3 a b c d e	4 a b c d e							
Human rights	1	2	3	4	5	6					
Gender equality	1	2	3	4	5	6	7	8	9		
Values	1	2	3	4	5	6	7	8	9	10	11
Cultural Diversity	1	2	3	4	5	6	7	8	9	10	11
Sustainability	1	2	3	4	5	6	7				
4. What information is still missing and what else would you like to know?											
5. How could you find the missing information and other information that you would like to know?											
6. Would the search be valuable for (a) personal understanding, (b) making a decision(s), (c) informing others?											
7. Can the missing information be categorized into one or more thematic groups?											
8. Can you think of another perspective that could complement the eight perspectives?											
[If yes, go to New and Emerging Perspectives box on the next page.]											

5. New and Emerging Perspectives

Sustainable development is an evolving concept. New challenges emerge as societies evolve. Similarly, new perspectives can emerge. As a result, the Multiple-Perspective Tool will need to be expanded to meet new and emerging challenges and ways of thinking about those challenges. Students should be encouraged to create their own perspectives that will help them understand the complexities of events, problems, issues and challenges.

As human cultures give rise to new achievements, new concerns and perspectives about sustainability issues also arise. For example, advances in genetic engineering have created new perspectives about parenthood, aging and disease. Changes in communication technology have created new perspectives about privacy, relationships and relative speed of information processing. Technological advances have also necessitated changes in types and interpretations of laws. Widespread agreement regarding the universality of human rights has extended the scope of international law. Transnational agreements as means to proactively manage natural and cultural resources have also become more accepted.

In part due to the rapid changes in technology-related cultural achievements, ways of earning a living and communication strategies, intergenerational differences in perspective sometimes overshadow other perspectives. Young people accustomed to instant messaging may not appreciate the influence of written documents shared over extended periods of time or of ritualistic performance traditions such as dance, songs and story-telling. An intergenerational perspective can be acknowledged by valuing perceptions of peoples' lived experiences, in relation to current situations and to future possibilities.

New and emerging perspectives are important in that they acknowledge past, present and future as perceived through peoples' lived experiences. Past events have unique meanings, depending on whether one has lived through them or whether one learned about those events from others. Intergenerational contexts can not only affect interpretations of current events and influence people's decision-making, but also lead to unique perspectives and insights that, in part, help define differences between generations.

A multiple-perspective approach to teaching and learning encourages awareness of changing perspectives, whether due to intergenerational differences, technological advances or emergence of new sustainability issues. Students' questions should be integral to classroom discussions, with teacher questions used only if needed. By helping students learn to express their ideas in a public forum, the new and emerging perspective of youth helps to promote leadership and introspection of the new

Encouraging students to develop their own perspectives is an integral part of the teaching-learning experience. They should be given the opportunity to analyse case studies and problems using their own ideas, backgrounds, values and beliefs. While the eight perspectives provided above give a comprehensive overview, the list is not all-inclusive. Students should consider on what their perspectives are based and what they mean. What drives them to their conclusions? How would their perspectives affect society and themselves as individuals? Students must reflect on how their perspective relates to sustainability, as well as events and challenges that their community faces. The outline below will be useful as students develop their own ideas for an intergenerational perspective.

Students should have the opportunity to create the questions for a new perspective. As a result, the Multiple-Perspective Tool does not include the intergenerational perspective as one of the eight described in this publication. Never the less, capturing the voices, concerns, experiences and wisdom of people of all ages – elders, adults, youth and children – is important to a multiple-perspective approach.

An Intergenerational Perspective

Please complete the following sections.

Description of the intergenerational perspective

Why is the intergenerational perspective important?

To society:

To students:

Creating questions

List at least six questions that you could ask to examine the understandings and opinions related to a sustainability event, problem, issue or challenge of different generations within your community.

1.

2.

3.

4.

5.

6.

III. First Steps toward Classroom Implementation

1. Teaching and learning techniques for the Multiple-Perspective Tool

Multiple-perspective analysis can be carried out through a variety of teaching and learning techniques. Teachers can use a combination of teaching techniques: discussion, role plays, interviews and out-of-class assignments.

Some current pedagogical practices that are good for implementing a multiple-perspective approach are described here.

1.1 Participatory Approaches

Participatory approaches to learning give students opportunities to become actively engaged in a wide variety of learning strategies in which the teaching-learning process becomes more of a shared responsibility between teachers and students. Students become responsible for:

- applying prior and new knowledge to sustainability issues,
- collaborating with peers, community members and teachers in making sense of the new situation,
- using discussions and other forms of communication to develop a shared sense of purpose, and
- proposing new solutions to sustainability events and challenges that are respectful of environmental, social and economic dimensions. Participatory approaches can lead students, through personal meaning-making, to commit to ESD principles and strategies, including wise use of resources, now and for future generations.

The goal of participatory approaches is to promote an orientation to action, based in knowledge and expressed publicly through words or deeds, which result in changes in environmental, social and economic inequities to ensure quality of life.

1.2 Place-based Learning

Place-based learning (PlaceBL) helps communities solve community problems through the efforts of students, teachers and school staff. PlaceBL uses the local community as one of the primary resources for learning. PlaceBL draws on the unique history, environment, people, culture, economy, literature, art and music of a particular place. Community members are regarded as resources and partners in the learning process. The focus on the local community creates opportunities to pair relevance with academic rigor, while promoting action-oriented citizenship (The Rural School and Community Trust, n.d.).

1.3 Problem-based Learning

Problem-based learning is a student-centered teaching and learning methodology in which students learn about challenges to sustainability in the context of complex real-world problems. Working in small groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem (Stanford Learning Lab, n.d.; Wikipedia, 2011b). Problem-based learning helps make concrete the abstract concepts often associated with ESD and the Multiple-Perspective Tool.

1.4 Case Studies and Documentaries

Case studies and documentaries are valuable ways for students to use and improve their multiple-perspective learning and analysis skills. For example, a class can view a documentary together with small groups of students assigned to listen and watch for information related to a specific perspective. Then the documentary can be analyzed in large group discussion drawing together the findings of each group. Through discussion, it becomes more apparent what information was present and missing in the documentary. The group can discuss good points and biases in the documentary as well as ways to find missing information or solutions.

1.5 Community Investigation

Of relevance to students is the study of local sustainability events and challenges. News accounts from reputable Internet sources, magazines and newspapers can provide ready supplies of case studies. Furthermore, teachers or students can write their own case studies, revolving around local issues. The students can write case studies using the perspectives in the Multiple-Perspective Tool as a basis for inquiry into their community. Students can identify information sources and then collect information from community members as well as collecting data from natural and human-built environments. Community investigation is one way for students to use skills from the science perspective, especially designing and carrying out research studies on community events and challenges.

1.6 Formulating Questions

Critical questioning is common to all the aforementioned pedagogies and the eight perspectives. Questions should elicit many types of knowledge, ranging from factual to speculative. Traditionally, the asking of questions is expected to be part of a teacher's role, but in multiple-perspective teaching, students should be equally responsible for posing significant questions. Whether for teachers or students, effective questioning represents a skill that is honed with practice.

Multiple-perspective instruction should include specific guidelines about how to frame questions and what types of questions to ask. For example, questions guide thinking into various directions, such as 1) history, 2) relationships, 3) application, 4) speculation, and 5) explanation.

- History questions would be used to highlight important facts that are presented in scenarios; for example, who is involved, what is the geographic setting and what are the main concerns?
- Relationship questions would probe for connections between people and the environment, cause and effects that are articulated or inferred as well as connections between local and global issues.
- Application questions would focus on connections to situations or processes that exist beyond a local focus – where else do these conditions or possible solutions exist?
- Speculation questions ask students to go beyond the facts of the scenario and to suggest possible causes or effects of what is known.
- Explanation questions focus on rationalization of the contextualized factors within the scenario using formal, disciplinary knowledge.

1.7 Discussions

Discussions provide opportunities for students to develop knowledge, understanding and judgment as they listen to and think about the different views expressed through a multiple-perspective approach. Discussions that are structured are more likely to be valued by teachers and students.

Discussions can be structured by time, participation and areas of focus.

- When structuring a discussion by time, allot a set amount of time for each topic of discussion. This encourages the teacher and the students to be better prepared when sharing comments, getting to the point and not being repetitive.
- When structuring a discussion by participation, each student can receive a certain number of tokens that correspond to opportunities to speak. Tokens encourage quiet students to speak up and limit over-participation of the very outspoken student.
- When structuring a discussion by topic, establish a priority of what questions should be asked or answered.

Keep students focused on the goals of the lesson by giving them specific roles or responsibilities. For all discussions, establish expectations for behaviour, including taking turns and listening respectfully.

2. Assessment Strategies for the Multiple-Perspective Tool

Assessment and evaluation of students' learning through a multiple-perspective approach should be multi-faceted, with criteria ranging from understanding of content knowledge, appreciation for multiple points of view and effective use of communication strategies. Such assessment is not simple. Complex learning related to sustainability cannot be assessed in a simple manner.

ESD recognizes the importance of knowledge, values, attitudes and skills in balancing social, cultural, economic and environmental demands. Each of these areas should be reflected in criteria for assessment. Assessment strategies should encompass the complexity of knowledge and skills taught through a multiple-perspective approach. A combination of written and performance assessments include:

- Interviews: Hold teacher-student or student-student interviews focusing on main ideas.
- Journal entries: Have students periodically document their understandings and new knowledge about particular events or challenges.
- Blogs: Beginning with a focused prompt, have students respond to the prompt and to one another's responses.
- Teacher observations: Make observations of how students interact with one another, with members of the community, or how they implement multiple-perspective skills.
- Performance of process skills: Evaluate students' abilities to collect data, draw and interpret graphs, make accurate measurements and complete other important skills.
- Written tests: Determine students' newly acquired disciplinary knowledge regarding the event or challenge.
- Communication: Monitor students' ability to communicate knowledge, ideas and values through use of expository writing (e.g. business and personal letter writing, posters, brochures, scientific reports and oral presentations) and creative writing (e.g. poems, songs, stories and fables).

A multiple-perspective approach to teaching and learning brings a complexity to the evaluation of student learning. Knowledge, while important, is less effective if presented as disconnected facts. Skills, performed within the context of a real-life event or challenge, have greater relevance. Expression of values or attitudes is more meaningful when linked to action. Such interrelations and linkages are more difficult to assess than single disciplinary knowledge. Rubrics have the potential to convey the interrelated importance of contextualized knowledge, skills and attitudes.

3. Learning Outcomes for a Multiple-Perspective Approach to ESD

When using a multiple-perspective approach for ESD, specific learning outcomes should be developed to meet each of the key aspects of quality education. Provided subsequently is a set of learning outcomes, which encompass the characteristics of quality ESD and specifically meet the goals of the multiple-perspective approach to teaching-learning. These learning outcomes can be adapted to meet local and national curricula, school level (e.g. secondary or pre-service teacher education), and teacher and student interests.

- Students will be able to identify and categorize information related to a sustainability event or challenge according to the eight perspectives in the Multiple-Perspective Tool.
- Students will be able to identify information, which is missing, to prevent in depth analysis of a sustainability event or challenge.
- Students will be able to choose perspectives that are important for analyzing a particular sustainability event or challenge.
- Students will be able to “detangle” the complexities of problems that their communities face.
- Students will be able to work in groups to share their knowledge of a sustainability event or challenge to piece together a “larger picture” or more complete understanding.
- Students will be able to obtain and interpret data related to sustainability events and issues.
- Students will be able to articulate how sustainability events and challenges affect people in the community differently.
- Students will be able to articulate how their abilities to analyze problems changed using a before and after using the Multiple-Perspective Tool.

In general, students will begin to understand complexity and to work with complexity.

Teacher Checklist for the Multiple-Perspective Tool

Pedagogies associated with education for sustainable development (ESD) are different than traditional pedagogies, which are often teacher-centred and focus on transmission of knowledge, such as lecturing. In student centred-pedagogy the teacher's role is to create a learning environment that empowers students as learners to inquire about the world around them. ESD pedagogies help student to learn to: ask critical questions, clarify their own values, envision more positive and sustainable futures, think systematically, respond through applied learning, and to explore the tension between tradition and innovation (Tilbury, 2011).

Moving from traditional pedagogies to those associated with ESD is not a readily apparent process. Teachers ask, What does ESD look like? How to I know if I am learning to teach from a multiple-perspective approach? The following list of statements is for use by teachers who use the Multiple-Perspective Tool. The checklist helps teachers self-assess their pedagogical and classroom practices while teaching from a multiple-perspective approach. As teachers gain more experience with the Multiple-Perspective Tool, they will incorporate more of the items below.

Acknowledges the learner's knowledge and experience

The teacher will hold discussions with students to identify what students know. The teacher should always provide students with the opportunity to use their life experiences within lessons (e.g. writing assignments), and the teacher will acknowledge the students' experiences as valuable by using them as examples in lessons.

The teacher acknowledges the learner's knowledge and experience by:

- Doing a pre-lesson assessment of student knowledge of a topic (e.g., leading a discussion) in order to learn what students know and do not know.
- Asking the students about their personal knowledge and experience related to the lesson.
- Affirming students' contributions to the class by referring to them later in the lesson
- Give students the opportunity to incorporate their life experience in assignments.
- Asking for the pupil's opinions or judgements.

Makes content relevant

The teacher will make abstract concepts locally and personally relevant to the students (e.g. visiting local sites, inviting guest speakers, etc.). The teacher should make the curriculum relevant to the students' lives or the lives that students want to live.

The teacher makes content relevant by:

- Using examples from the community in which the students live.
- Giving or requesting students to give concrete examples of abstract concepts.
- Inviting people from the community to speak in class or interact with the students.
- Visiting local sites that are pertinent to the curriculum.
- Making explicit links from the content being studied to the daily lives or future lives of the students.
- Including skill-building in assignments that will help students gain employment in the future.
- Requesting the students to propose a solution to a current local problem

Uses many instructional and learning processes

Because people learn in different ways, the teacher will engage all students at some point in a lesson by addressing each learning modality (e.g. auditory, visual, etc.), not just the way the teacher learns best. The teacher has the responsibility to ensure that all students are engaged and that learning is accessible to all. This becomes an issue of equity in the classroom, and equity is at the base of ESD.

The teacher uses many teaching instructional and learning processes by:

- Considering the needs (e.g., cognitive and social) of individual learners while developing lessons.

- Considering the needs of individual learners while delivering lessons.
- Creating several forms of assignments to meet the variety of learning styles and needs of students in the classroom.
- Using student centred teaching/learning techniques.
- Creates social learning situations where student learn individually, in pairs, in small groups, and large groups.
- Assuring students use lower order and higher order thinking skills daily.

Enhances the learning environment

The teacher will ensure that the learning environment is a safe space for all students, both physically and emotionally (e.g. the teacher will not allow bullying in the classroom; students will be allowed to leave the class to use the toilet, etc.).

The teacher enhances the learning environment by:

- Reducing barriers to participation by creating a positive learning environment (e.g. without corporal punishment and bullying).
- Permitting students to explore new idea and complex issues in a supportive learning environment that acknowledges there are many roads to success.

References

Tilbury, D. 2011. Education for Sustainable Development: An Expert Review of Processes and Learning. Paris: UNESCO. <http://unesdoc.unesco.org/images/0019/001914/191442e.pdf>

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Glossary

Culture is a set of distinctive spiritual, material, intellectual and emotional features of a society or a social group, and ... encompass, in addition arts and literature, lifestyles, ways of living together, value systems, traditions and beliefs.

Education for Sustainable Development (ESD), in its broadest sense, is education for social transformation with the goal of creating more sustainable societies. ESD touches every aspect of education including planning, policy development, programme implementation, finance, curricula, teaching, learning, assessment, and administration. ESD aims to provide coherent interaction between education, public awareness and training with a view to creating a more sustainable future. ESD is far more than teaching knowledge and principles related to sustainability.

Event or challenge The phrase event or challenge is used in this document to refer to events, problems, issues, situations, challenges, etc. with which local communities and the planet grapple. These events and challenges often threaten sustainability in terms of environment, society and economy, singly and in combinations.

Gender equality acknowledges the important role that gender plays in many societies. While women/girls and men/boys play different roles, they should be valued equally. Both women and men should be treated with respect and dignity. Gender equity implies that opportunities for education, work and contributions to society should be determined by the person's attributes, not by gender.

Human rights are basic rights and freedoms to which all people are entitled regardless of nationality, sex, age, national or ethnic origin, race, religion, language, or other status. Human rights are universal and egalitarian, with all people having equal rights by virtue of being human.

Instant messaging is a high-speed text-based communication method available through a network such as the Internet, usually used for short messages.

Intangible cultural heritage includes music, oral tradition, drama, skills and the other parts of culture that can be recorded but cannot be touched or interacted with.

Learning modality is a sensory channel for learning (i.e. visual, auditory and tactile-kinaesthetic).

Participatory approaches are teaching methods, which require students to be active rather than passive learners (e.g., listening to lectures and memorizing). Participatory approaches to teaching and learning give students opportunities to become actively engaged in a wide variety of learning strategies in which the teaching-learning process becomes more of a shared responsibility between teachers and students. Participatory approaches often take student out of the classroom into the community.

Perspective is a position through which a subject or its parts are considered or evaluated. For example, a perspective is a mental point of view through which an academic discipline interprets the world.

Place-based learning is designed to help communities in solving local problems through the efforts of students, teachers and school staff. Place-based education uses students' local community as one of the primary resources for learning. Thus, place-based education promotes learning that draws on the unique history, environment, people, culture, economy, literature, art and music of a particular place. (http://en.wikipedia.org/wiki/Place-based_learning)

Problem-based learning is a student-centered teaching and learning methodology in which students learn about challenges to sustainability in the context of complex real-world problems. Working in small groups, students identify what they already know, what they need to know, and how

and where to access new information that may lead to resolution of the problem. (http://en.wikipedia.org/wiki/Problem-based_learning)

Quality assurance framework includes specific dimensions of a quality education, so that teachers and administrators know what is expected in terms of quality and whether or not it is attained. The concept of a quality education changes between communities and countries; however, there are common dimensions.

Role play assuming the discourse, the attitudes and actions of another individual, especially in a make-believe situation in an effort to understand a differing point of view or social interaction.

Rubric is a scoring aid for assessing and evaluating student assignments. Rubrics typically list elements of the assignment down one side of a grid with levels of attainment across the top. Some rubrics describe specific levels of attainment.

Science process skills include observing, measuring, inferring, classifying, predicting and communicating as well as integrative skills such as, formulating hypotheses, identifying variable, designing investigations, experimenting, analysing data and formulating models.

Secondary schooling refers to education beyond primary schooling and before university. Secondary school is for ages 13 to 18 approximately.

Spatial distribution refers to the position, arrangement or frequency of occurrence of something over an area or across the surface of the earth.

Sustainability is a paradigm for thinking about the future in which environment, social, and economic considerations are balanced in the pursuit of development and an improved quality of life. The sustainability paradigm is a major change from the previous paradigm of economic growth with it, damaging social and environmental consequences (UNESCO, 2012).

Values are an internal or cultural reference for what is good, important, useful, beautiful, desirable, constructive, etc.

Worldview are coherent understandings of the “nature of reality” (e.g. the surrounding world), which permit individuals or groups to interpret new information. Worldviews are underlain by empirical (e.g. science or economics), transcendent (e.g. religious, philosophical, spiritual, and theological), affective (emotional) elements or some combination of these ways of thinking and knowing. Differences in worldview lead individuals to ascribe different meanings to the same event.

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Additional Resources

Interviewing skills

Purdue Online Writing Lab. *Interviewing*. <http://owl.english.purdue.edu/owl/resource/559/04/>

Purdue Online Writing Lab. *Interview and survey questions*. <http://owl.english.purdue.edu/owl/resource/559/06/>

Place-Based Learning

Center for Ecoliteracy - <http://www.ecoliteracy.org/strategies/place-based-learning>

The Promise of Place. [http://www.promiseofplace.org/Stories from the Field](http://www.promiseofplace.org/Stories_from_the_Field)

The Rural School and Community Trust. *What Does Place-Based Learning Look Like? Examples of Place-Based Learning Portfolios*. <http://portfolio.ruraledu.org/>

Problem-Based Learning

Stanford Learning Lab. <http://ldt.stanford.edu/~jeepark/jeepark+portfolio/PBL/inclassview.htm>

Rubrics

The Rural School and Community Trust. *Documenting and assessing place-based learning: Example portfolios*. http://portfolio.ruraledu.org/main_rubric_1.htm

Teaching and learning strategies

Teaching and Learning for a Sustainable Future. *Experimental learning*. http://www.unesco.org/education/tlsf/mods/theme_d/mod20.html

Teaching and Learning for a Sustainable Future. *Enquiry learning*. http://www.unesco.org/education/tlsf/mods/theme_d/mod23.html

Teaching and Learning for a Sustainable Future. *Appropriate assessment*. http://www.unesco.org/education/tlsf/mods/theme_d/mod24.html

Teaching and Learning for a Sustainable Future. *Future problem solving*. http://www.unesco.org/education/tlsf/mods/theme_d/mod25.html

Teaching and Learning for a Sustainable Future. *Community problem solving*. http://www.unesco.org/education/tlsf/mods/theme_d/mod27.html

Timelines

How to make a timeline. http://dohistory.org/on_your_own/toolkit/timeline.html

How to build timelines. <http://www.microsoft.com/education/en-us/teachers/how-to/Pages/timeline.aspx>

Town Council Strategy

Khourey-Bowers, C. 2008. *Structured academic controversy*. <http://serc.carleton.edu/sp/library/sac/index.html>

Lee, R. (n.d.) *Structured academic controversy: What should we do?* <http://www.nwabr.org/education/pdfs/PRIMER/PrimerPieces/SAC.pdf>

UNESCO has launched the “*ESD Learning & Training Tools*” series to enhance the availability of teaching, training, learning and resource materials on ESD issues through a wide set of practical tools. In particular, this series provides individuals, communities and governments that are at different stages in their understanding of the benefits of a sustainability approach and the role of education in it, with practical tools to review their situations and put in place ESD actions.

UNESCO has prepared *Exploring Sustainable Development: A Multiple-Perspective Approach* to provide a multiple perspective approach to education. The world of today is complex. To create a sustainable future will require the citizens and leaders of today and tomorrow to be able to understand complexity and work with complexity. This multiple-perspective tool is designed to help secondary students of today to do just that – to understand and work with complexity. For each of the eight perspectives (scientific, historical, geographic, human rights, gender equality, values, cultural diversity, sustainability), the tool explains why the perspective is important, gives examples of how to use each perspective in a secondary classroom and provides lists of questions to encourage use of the perspective.

Several thematic companions to this tool are being created including on water, biodiversity and climate change. Each companion contains lesson plans, questions, lists of teaching resources including online videos, and case studies.