Community-based Medical Education Module
Incorporating and Promoting the Concepts of
Education for Sustainable Development (ESD)

Teacher’s Guide

Version 1.0

March, 2009
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INTRODUCTION

What is Community-based Medical Education (CBME)

Community-based Medical Education (CBME) is a broad concept, providing students with opportunities to interact with people from a wide range of social, cultural, and ethnic backgrounds (Magzoub ME et al. A taxonomy of community-based medical education. Academic Medicine 75 (7), 699-707, 2000). It requires a synthesis of clinical skills, knowledge, capabilities and attitudes, and is often directed towards priority health needs and the redistribution of resources to specific populations. In CBME activities, the community provides a learning environment for medical education that is relevant to community needs. The communities involved may be urban, peri-urban or rural, central or isolated. Students, teachers, community members and representatives of health and other sectors, ideally, are actively engaged throughout the education experience. CBME focuses on the community – where most health problems can be prevented or treated.

Effective CBME can help students to consider the wellbeing of patients, families and the community at large, both during their training and later in their careers as health care providers. It can give students a strong foundation for a holistic approach in health care delivery. Some aspects of medical education which in practical terms require a CBME approach include:

- Interactions among health care providers, patients and family members
- Awareness of hazards in patients’ environment
- Impacts of hospital admission on patients, families and communities
- Continuity of care
- Importance of health promotion and disease prevention in communities

What is Education for Sustainable Development (ESD)

The term “sustainable development” (SD) was used by the Brundtland Commission, which coined what has become the most often-quoted definition of sustainable development as “development that meets the needs of today’s people without compromising the ability of future generations to meet their own needs (“Brundtland Report”-The report of the World Commission on Environment and Development, 1987). Education for Sustainable Development (ESD) seeks to prepare people (in this case specifically including medical students) to assume the roles and responsibilities necessary to create a sustainable future. To promote ESD, it is crucial to organize programs on sustainable development within communities.

The core concepts and practices of ESD extend well beyond “environmental education”. The founding value of ESD is respect: respect for others, respect for both present and future generations, respect for the planet and for what it provides to us. Targeted research, capacity development and experience are needed, with some efforts already underway, to integrate ESD
components into curricula at all levels of education and in all sectors and disciplines including medical education. Everyone should have the opportunity to benefit from high quality education incorporating ESD and to learn and appreciate the value and importance for sustainable development of each person’s behaviors and lifestyle.

**CBME and ESD: Relevance of sustainable development for medical professionals**

CBME and ESD share many characteristics, approaches and values, some of which include envisioning -- being able to imagine a better future, critical thinking and reflection -- learning to question our current belief systems and to recognize the assumptions underlying our knowledge, perspectives and opinions. Core to the concept of ESD is ability to build partnerships, promoting dialogue and negotiation, learning to work together, participation in decision-making (Ref. Education for Sustainable Development [http://en.wikipedia.org/wiki/Education](http://en.wikipedia.org/wiki/Education)) and empowering people.

CBME and ESD also share an important objective of helping students acquire and use skills needed to help communities identify and understand problems and to develop solutions to them, especially with problems involving health. CBME and ESD can and should support each other. This manual is a result of a workshop which brought together CBME faculty and medical education and ESD resource persons to consider how ESD could be effectively integrated into CBME. The objective of such integration would be to train physicians who would understand communities and their functioning, would understand and appreciate the concepts of SD, and could work in partnership with communities to identify and deal in sustainable and locally appropriate ways with health, social, economic and environmental factors that contribute to ill health and other problems in the community.

This document was drafted to help faculty members to incorporate ESD in CBME programmes. We believe that ESD can be incorporated in existing CBME curricula, materials and activities and that doing so will strengthen both CBME and ESD. Some health professionals including medical students initially fail to understand that sustainable development is their business. They feel that governments and development organizations should take responsibility for SD. Therefore, faculty should help students understand SD and its direct links with and importance and implications for health professions, and specifically for doctors in their various roles.

**Who are the “target audiences” of ESD incorporated in CBME?**

ESD incorporated in CBME has multiple target audiences, some targeted less directly than the immediately obvious ones. We can, however, summarize those audiences and their potential roles and importance. These are key groups with whom CBME faculty need to communicate and interact in their efforts to introduce and apply SD in and through CBME: (For examples of tools and activities useful in approaching and communicating and working with each group, see Appendix C from which this list is derived.)
• Medical students are the key target group of CBME and of SD within and supported/implemented by CBME. It is important that all of them come to understand the basic concepts, implications and importance of SD, and their CBME experiences should help them achieve that. With effective integration and implementation of Education for SD (ESD) in and through CBME, many medical students should come to give consideration to sustainability in their own lives. Later, as health care providers, and as opinion leaders and trusted sources of information, they could also become important advocates of SD. Those who will work in community settings, especially, will have ample opportunities to communicate SD concepts and their implications in their dealings with patients, communities, and their problems and decisions.

• Communities themselves, including today’s and those of future generations, are the ultimate beneficiaries of the integration of SD concepts and actions in CBME. Because CBME is by definition community-based, both CBME faculty and students will have constant opportunities to convey SD concepts to community members and leaders and to help them to recognize SD’s importance, make appropriate decisions, and take appropriate actions. They will also benefit from doctors’ ongoing application of SD concepts in their healthcare practices and their dealings with and support of the communities.

• Some CBME faculty members are expected to take and lead initiatives to integrate SD in CBME. Other CBME faculty, however, will be initial and continuing targets for related communications; most will need to become (sooner or later) key supporters and implementers of SD in and through CBME.

• Non-CBME faculty (mainly within the medical school but also non-medical faculty) will sometimes need to understand and hopefully agree with and support CBME and the integration of SD into CBME. Some could also come to introduce SD considerations in their own teaching, decisions and actions.

• High university officials will often need to be informed of the importance and rationale for incorporating SD in CBME, and at times they will need to approve or support related CBME proposals, plans, programs and activities. Some may take also come to support SD and introduce and implement it more broadly.
INCORPORATING SUSTAINABLE DEVELOPMENT IN COMMUNITY-BASED MEDICAL EDUCATION

Aim:
This guide for CBME teachers, along with the accompanying guide for students, is intended to encourage, facilitate and support the incorporation of ESD in CBME programs. ESD can become an integral component of medical schools’ existing CBME, and it can be integrated from the outset in new programs. CBME itself prepares medical students for working in and with communities, which will give them many opportunities to disseminate and help communities to apply SD concepts.

Competencies to be acquired by students through CBME incorporating Education for Sustainable Development

It is expected that through Education for Sustainable Development (ESD) in Community-based Medical Education (CBME) students will acquire the following competencies:

1. Envisioning better future for the community through SD.
2. Critical thinking and reflection, helping people to examine environmental social, and cultural structures within the context of SD. This provides a holistic approach to individuals, families and community at large.
3. Systemic thinking: looking for links within and among systems, decisions and strategies at various levels, when trying to find solutions to community health problems related to the full spectrum of health.
4. Building partnerships: Promoting dialogue and negotiation skills, learning to work together and to take into consideration the needs, positions, values, and interests of many stakeholders.
5. Develop partnership with the community through: participation of different stakeholders in problem identification, definition and providing solutions “Empowering people”.

What medical colleges need to do to incorporate the concept of SD in CBME.

- **Relate program outcomes** competencies, goals, objectives, contents and activities to the principles of ESD.
- **Empower the community** through health promotion programs, partnership programs and family health programs.
- **Introduce an educational approach** based on experiential or task-based “Learning by Doing” in the community – with the community.
Three focus areas in CBME that can be oriented towards Sustainable Development:

A. Community Assessment with emphasis on sustainable development (economic, environmental, social and cultural).

1. Demographic data
   - Location
   - General description
   - Population characteristics
   - Environmental characteristics

2. Community health problems: identification, analysis, priorities, implications, and possible approaches
   - Perceived needs and development
     - Health
     - Economy
     - Environment
     - Societal
   - Action plan
   - Community participation and expectations
   - Community resources

*Tools for community assessment are described in Appendix A.

B. Population Health

Aim
Familiarize medical students with basic concepts, principles and means of applying knowledge and skills of demography and epidemiology to population health.

- Demographic composition of a population
- Identify health indicators to plan for healthcare needs
C. Community Based Health Research

Aim

Acquire hands-on experience in community based / health systems research methodology “Learning by Doing” addressing priority health problems in the community and in relation to SD.
When conducting Community-based Health Research, an important question that needs to be assessed is “Why does so much Community-Based Medical Research have only limited impact on the community?” Answers to this question could include:

- Problem definition is usually dominated by the researchers’ perceptions, not the community’s perceptions and needs.
- The concerned community is not involved in developing the research and its conceptual and methodological frameworks.
- The health system is not a partner in the research’s development, implementation and analysis and in communication of the results.

In order to avoid such problems, it is important to involve various stakeholders in the community and in health systems in at least key phases of the research “partnership”. This helps ensure relevance, application of the results, and positive impact.

* Community projects are described in Appendix B.

**Where can learning take place?**

This depends on the Community Health Systems, available resources and cultural contexts, all of which vary from one country and location to another. It is important to maximize access to and involvement of health and social community services e.g.

- Elderly homes
- MCH facilities and services
- School Health Services
- Facilities for disabled children.
- Public Health Services (health education, food inspection, vital statistics etc).
- Environmental Health – Ministry of Health (Environmental Hazards)
- Industrial Clinics

* How to identify and select model sites and study communities for CBME is described in Appendix B.

* A Decision-Aid Spreadsheet for Community Selection for CBME is presented in Appendix B.

* How to integrate sustainable development concepts and practices in community-based medical education is illustrated in Appendix C.
ASSESSMENT

Assessment of students in CBME Programs incorporating SD

Different modalities of student assessment should be used, applying the best and most appropriate assessment instruments to verify the extent to which the training objectives and learning outcomes are being achieved. Developing a blueprint, which is a table of specification for core knowledge, skills or attitudes to the assessment.

Examples of tools for various types of assessment include the following:

- Written Assessment
- Multiple Choice Questions (MCQ) testing application of knowledge not recall, e.g.) context rich scenarios describing situations.
- Short answer questions
- Portfolio – mini project
- Reflective learning “Reflective Journals”
- Research proposals and reports
- Research poster presentations
- Report on field experience
- Students’ peer evaluation
- Community evaluating students

Project presentation by each group in a large classroom to report their activities to the class could provide another type of opportunity to evaluate the group of students.


Program Evaluation:

Kirkpatrick’s four-level (considering reaction, learning, behaviour and results) conceptual model for evaluating effectiveness of educational programs may be appropriate for evaluation of CBME programs, and for ESD within such programs, because it is very widely known and used.

Level 1: Students’ and participants’ reactions and perceptions
Level 2: Changes in knowledge and skills
Level 3: Changes in behavior
Level 4: Impacts

Followings also could be used for program evaluation.

- Students’ feedback – Quantitative and Qualitative
- Stakeholders’ reports – from families and partners’ organization
Example of a student assessment checklist
*The checklist can be used in assessment

STUDENT ASSESSMENT CHECK LIST

<table>
<thead>
<tr>
<th>Student Name………………………………………</th>
<th>Course…………………………………………</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings by (Name)…………………………………</td>
<td>Total Score ………………………………………</td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Satisfactory</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student’s participation</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2. Ethics and professionalism</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>3. Level of understanding of the subject</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4. Communication skills</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5. Appropriate assessment of nutrition status in under fives</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>6. Evidence-based practice</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>7. Use of appropriate analysis methods</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>8. Provision of appropriate key health messages</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>9. Effectiveness as a team member</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>10. Completion and quality of Community activity report</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Comments: (Please refer to item number if appropriate)

Action recommendations:

Note:
- Items can be equally or differentially weighted
- Since each item is important for professional performance, any item rated less than “satisfactory” should trigger some remedial action
APPENDIX A

COMMUNITY ASSEMENT
COMMUNITY ASSESSMENT

Community exposure and involvement are the best concrete experiences to help students understand and appreciate SD issues. Two major activities that students can carry out in and with the selected community are assessing the community’s situation and developing a community project. These provide students with rich opportunities to learn SD relevant skills such as envisioning, system thinking, critical thinking and reflection, building partnerships and empowering people.

Key messages concerning community assessment should include the followings:

A community assessment or community situation assessment is an exercise in which students gather information regarding not only the problems and concerns of the community but also its strengths and its SD potentials.

Two major forms of information gathering that can be used in community assessment are quantitative methods (such as surveys) and qualitative methods (such as interviews and observation). Students should be informed of the strengths and weaknesses of each method and shown how they complement each other. Both methods should be employed in a community assessment.

Unbiased interpretation of the information obtained is critical. This is a good opportunity to exercise system thinking and critical thinking skills. A key process must be employed – triangulation or cross checking. This can be best done by comparing the interpretation of the data obtained from different tools, different participants, different sources, and in the light of different theories.

Students should be aware that community members themselves can and preferably should be active partners in community assessment activities. Potential partners in the community include community leaders, school headmen, volunteers, program staff, administrators, and other community members.

“Ownership” of the activities by the community can help assure accurate and useful information. In many circumstances, community assessment by the community itself can be a strong empowerment process.
Case Study: Thailand

At Tambon Mai Riang, with a population of 5,000 and 1,400 households in the South of Thailand, a series of informal discussions among villagers and leaders led to a community assessment process. They were surprised to discover that the accumulated debts among all villagers had reached 74 million Baht in 1994 (equivalent to 2 million US$), with an increase of 4-15 million Baht per year (equivalent to 0.4 million US$). The villagers analyzed the reasons behind this by themselves and set up development plans to stop the “bleeding” – money leaking out of the village. They encouraged members to produce sufficient amounts of local goods that they formerly had to buy from outside and to form a cooperative to support education and jobs development for members. The successful community eventually becomes a role model for sustainable development in Thailand and the leader has received a Ramon Magsaysay Award in 2004.

http://www.nationalhealth.or.th/eng/
Humanized Thailand Health Innovation: Stories from Community p.144—149
National Health Commission Office

Students should be informed that they might also be surprised and interested by the information they obtain from community assessment, especially if they have open minds and are eager to learn new things.

Community Assessment Tools

Students should be provided with knowledge about available community assessment tools and required procedures.

I. Quantitative methods:

Students can use secondary data collected by local health facilities or community leaders. They can also collect primary data by conducting a survey.

Strengths and limitations of the two approaches above need to be discussed. Secondary data in some circumstances might be of limited value -- outdated or insufficient, or un-standardized and un-representative, whereas a survey requires more resources. However, an inadequately designed survey might also produce biased and unrepresentative information.

Learning how to conduct a good survey is now an essential component of any undergraduate education in many universities. Students should be encouraged to take this seriously.

A rapid health survey methodology can be taught, especially if the students have too limited time available to conduct a lengthy survey.

Resource books and references on community surveys and their analysis and interpretation should be provided.
Key steps and caveats of conducting community survey should be given so that students can pay more attention to important and problematic aspects:

- Formulation of survey objectives
- Ethical considerations of conducting community survey
- Selection of samples within the community
- Choosing variables to be surveyed, which might include demographic pattern, socio-economic pattern, mortality pattern, reproductive measures, morbidity pattern, community perception, environmental matters, etc
- Devising or adapting data collection tools such as questionnaires
- Making decision on data collection methods such as interview (mostly done by face-to-face interview, although in special circumstances it can be done via telephone, by post or via internet)
- Analysis of data – some basic statistical methods and presentation of the results should be taught.
- Interpretation and conclusions

II. Qualitative methods

Qualitative methods include 3 major modes of data collection, i.e. in-depth interviews of key informants, focus group discussions, and observation. Students should be informed that qualitative methods based on anthropological perspectives can be powerful in community assessment – for example the seven tools to study community ways of life\(^1\). Using the seven tools, students can have a grounded understanding of the community within a short period of time. The seven tools are:

(1) **Community life map**: This is the first tool to be used at the start of community assessment. Conducting the community life map gives students the whole picture of the community. Observation and walk-through techniques provide students to learn about social spaces and social functions of places in the community. It can also provide information on participant use, access to community resources and community social phenomenon.

(2) **Community history**: This will be obtained by interviewing key informants (for example community leaders, school head master, monk, and the elderly). Students will learn the legends and culture of the community. Students will have an in-depth understanding of the community way of life. This will reduce biases or judgments toward the way of life of community people.

(3) **Community calendar**: The student discovers the community calendar upon community social and cultural issues by interviewing with the community key persons such as community leaders, housewives, farmers, the elderly, children or teenagers, and people of all ages, genders and professions. The student asks each person to identify different tasks they must do at different times of the year (related to paid and unpaid work, social events, education activities, family health, environmental change, or the community festivals) and plots them on a time-line sheet. The community calendar helps students as well as

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community leaders determine the best time for a certain project and consider how a project will affect different groups of people.

(4) **Community structure:** There are two types of community structure - formal (community leaders by law) and informal structure (such as housewife group, dancing group, etc.). By interviewing the leaders and members of the community about organizations and their functions, students will understand the community’s social relations. This helps determine appropriate stakeholders of a project.

(5) **Community health systems:** The aims of studying community health systems are to look for various types of health care utilized by people in the community and their health behaviors. Generally, there are 3 sectors of community health systems i.e. population sector (patient, family, social network and community), folkway sector, and professional sector. By interviewing the community leaders, health center staff, old aged persons, etc., student will have much more understanding of community health behaviors and also help determine stakeholders of a project.

(6) **History of significant persons:** Using interview technique, students will learn from experiences of the significant persons (they are many ways to define them). Personal life stories of significant persons will provide students with humanized aspects of health and illness.

(7) **Family genograms:** Family genograms of 2-3 families who were the pioneers in settling and establishing the community in the past will give in-depth understanding of the community history, community structures, social relationships, and political structure, as well as health conditions.

Incorporation of sustainable development in the community, along with community participation, should be involved in all steps of the community assessment. In the process of development of the community project plan, community participation stands for partnership which is built on the basis of dialogue among the various actors, during which the agenda is jointly set, and local views and indigenous knowledge are deliberately sought and respected. This implies negotiation rather than the dominance of an externally set project agenda. Thus people become actors instead being beneficiaries (OECD 1994). Therefore, when the community assessment results become available, the community would be more likely to accept and adopt the students’ ideas and to join in developing the plan, rather than remaining passive potential beneficiaries. They will then be more likely to support the community project intended to help overcome or diminish their community health problems.
III. Teaching method for community assessment

Learning objectives for community assessment:

The student should understand and be able to apply the assessment techniques in a community.

The steps of community survey are followings:

1. Content about community assessment should be given to the students.
2. Students are assigned to the community in groups, both for reasons of safety and for the purpose of group process.
3. Identify a survey sample within the community.
4. Choose well-designed questions which include demographic patterns, socio economic patterns, mortality pattern, reproductive measures, morbidity pattern, community perceptions and/or community related health such as environmental health, etc.
5. Students discuss the instructions and questionnaire with a faculty advisor. During this step, the faculty should verify that the students have included questions that could give them basic knowledge about the economic status, the resources and the sociopolitical condition of the community. They can then stimulate students to think about the sustainable development concept by asking some of these leading questions when going through the questionnaire with the students:
   - What are the available resources within the community? Do you want to know how the community plans to preserve these resources?
   - If the villagers wanted to have something done, don’t you want to know who they would turn to? (Exploring the sociopolitical condition of the community)
   - How can we find out what common diseases are found in the community? What do you think are the causes of these diseases? Are they related to the environment or the way the people live?
6. Students collect the data by interview (or questionnaire, by phone, email, internet).
7. Students analyze the data.
8. Students use anthropological tools (seven tools as mentioned above).
9. Students discuss the research findings with the advisor(s). During this step the advisor(s) then can add some of these leading questions to stimulate the students’ awareness of sustainable development.
   - What are the common diseases found in the community? What do you think are the causes of these diseases? Are they related to the environment or to the way the people live?
   - Are there any other non-medical problems within the community? Are they related to the environment?
Are there ways to solve these problems that are in keeping with sustainable development concepts?

(ask other students) Do you think that the method just described by your friend is economical feasible and sustainable in this community? And why?

(ask other students) Do you think that the method just described by your friend is culturally acceptable and sustainable in this community? And why?

(ask other students) Do you think that the method just described by your friend is sociopolitically feasible and sustainable in this community? And why?

(ask other students) Do you think that the method just described by your friend is environment-friendly and environmentally sustainable in this community?

(10) Prioritize community health problems

(11) Develop a community health plan

(12) Summary and conclusions

(13) The students present their findings to the community administrative team, the community leader, and the local health personnel. The findings also should be made available to the community and the local health office.
IV. Use of Audio-Visual Materials for ESD in CBME  
(Experience of Khon Kaen University in Thailand)

The use of audio-visual media in CBME (and in ESD within CBME) can be very effective if combined with active discussions by students and experienced faculty/staff. Students should be encouraged to raise questions about the video before and after viewing. The student group and faculty/staff should then discuss relevant issues regarding sustainable development, roles of medical profession, roles of medical students, etc.

Although case studies and reports featuring professionally prepared and tested audio-visual materials tend to be more attractive and to require shorter time to effectively convey key messages, case studies and audio-visual materials prepared by CBME faculty and sometimes by students themselves can also be very useful and their development becomes an important part of learning process.

The Thai National Health Foundation, The Thai Health Promotion Fund, The National Health Commission Office of Thailand and the Sustainable Community Development Foundation provide educational materials in video format. Many of them are appropriate and of high quality to be used in the ESD in CBME. Followings are the examples of the videos.

A five-minute video on health impacts of pesticide use among Thai farmers and how it cause illnesses, destroys natural fish, disrupts family cohesion etc. effectively conveys messages regarding the importance of SD considerations in dealing with health and other problems

A video on a group of Thai NGOs’ project to teach farmers to themselves conduct research on insects, rice species and soils effectively conveys messages on how to apply essential SD skills. (14 minutes)

A video on the life of a rural doctor who facilitates groups of farmers to organize a sustainable agricultural movement targeting one million farmers in Thailand over the next 20 years might inspire some students. (15 minutes)

A video on a group of medical students and their presentation that demonstrated great success in their community field work (e.g. won a faculty award and the community’s praise) encourage students to do excellent and helpful community projects. (15 minutes)

For educational materials, contacts can be made at the organizations' websites and addresses:
1. The Thai National Health Foundation www.thainhf.org
3. The Thai Health Promotion Fund www.thaihealth.or.th
4. The Sustainable Community Development Foundation, Ubonrat Hospital 176, Sukkhaphiban, Tambon Khuen Ubonrat, Amphor Ubonrat, Khon Kaen 40250, Thailand  
Tel: (662) (043) 446-112-3, Fax: (662) (043) 446-112
APPENDIX B

COMMUNITY PROJECTS
APPENDIX B

COMMUNITY PROJECTS

Students’ community projects

Community projects designed by medical students with the assistance of faculty members are one approach to teaching, learning, disseminating and applying ESD in and through CBME.

Projects are expected to be student-centered and community-based. The projects should be planned and carried out in a manner that enables the students to identify a problem with community participation and often through community assessment. After identifying and prioritizing problems, the students and community are expected to select one problem for attention, define contributing factors, and consider suitable solutions in partnership with community members. The solution selected should give full consideration to SD concerns and should be feasible and locally appropriate.

Learning objectives;

The student should know the procedures involved in setting up community participation meetings

- The student should be able to work in groups and understand the group process.
- The student should be able to identify the obstacles to group process.
- The students should be able to incorporate the concepts of SD in project planning.

Teaching methods;

1. The groups of students are assigned to create a project with these features:
   a. Element of community participation including the entire set of stakeholders within the community.
   b. Identification of available resources within the community.
   c. Consideration about the project being economically feasible, culturally acceptable and environmental friendly.

2. Regular meeting with a faculty member should be made available for the student throughout the whole period of the projects’ development. These meetings are group discussion sessions designed to help facilitate the group process of the students, guide the students, receive reflection from the students, and follow up the students’ progress.

3. During the project, with the community, problems must be prioritized. Problem identification and prioritization can be done in two ways.
   - The students can identify the problems using the process of data gathering either from primary sources (from their own community assessment) or from secondary sources (data from local health offices or local government offices). Students then go into the community to seek, with the community, causes, contributing factors, and sources of that problem, and then consider possible solutions.
The community and the students meet and identify the problems together.

a. The students gather and analyze the data both from the primary and the secondary sources.

b. With help from faculty member and local health workers, the students set up a meeting with the community leaders, community administrative committee, important groups within the community, and important persons within the community.

c. During this meeting the students present the data and then take part as facilitators.

d. The community analyzes the problems, prioritizes the problems, and identifies community and other resources available. As facilitators, students might ask community members in the meeting questions such as:
   i. What do you think is the most important problem? (Data indicating of the magnitude of the problems can be presented by the student to the community.)
   ii. Do you agree with the data we are presenting about the problem and its magnitude?

e. Then the students and the community member brainstorm for a solution. This can be done in several ways. Concept maps or decision trees or fish bone techniques can be useful for that process.

4. All of the aspect of project in the project framework will be drafted together.
   - Introduction: Show the status of the problem and analyze its causes. Identify all the available resources
   - Concept of the project: Show the main idea used in designing the project.
   - Outcome of the project: Clearly state the measurable intended outcome of the project.
   - Method and action plan for the project: Show the activities involved in the project and the timeframe.
   - Resources: Identify all the resources needed to plan and carry out the activities. Identify the available resources. If possible, indicate ways to obtain the resources.
   - Project assessment criteria/issues: show how the project can be evaluated.

5. The students, with the community’s inputs, write out the framework of the project.

6. In a group discussion, students and CBME faculty review the details of the project framework. In the group discussion, faculty member(s) make sure that necessary features are either mentioned or detailed and written down in the project framework output. During group discussion, the faculty member can stimulate the students’ critical thinking by asking questions such as:
   - Why do you think it will be feasible?
   - Do you think that the community will accept the project? Why?
   - Are there other ways of solving these problems? Why choose this one?
Preparation for Community Work

Before taking students into a community, there are several things that CBME faculty members should prepare beforehand, these include:

- Selection of a community
- Community orientation
- Student orientation

A crucial step in community-based medical education is choosing communities that provide appropriate learning environments for the medical students depending on the objectives of the visits or activities.

Model sites are sites that faculty can use for field visits or for documentary making as effective positive examples to initiate discussion of the concepts and implication of sustainable development. On the other hand, study communities are communities where student can carry out the actual community assessments and other activities. Some community will fit into both categories.

- **Important points for identification and selection of model sites and study communities**

  1. **Model Sites: For field visits or for documentary making**
     Potential model sites can be identified through local news media and by networking. Sites chosen should show effective use of the concepts of sustainable development (e.g. economical, environment friendly, and culturally acceptable) for problem solving.

  2. **Study Communities: For community assessment assignments and other activities**
     When choosing study communities, important issues to be considered include the following:
     
     i. Travel and accessibility factors
        a. Distance from university
        b. All-season accessibility
        c. Safety & Security
     ii. Receptive community
     iii. Languages spoken in the community
     iv. Population size and composition/ number of households
     v. Community Leadership strength
     vi. Community Organization
     vii. Community health initiatives
     viii. Health facilities and health services available in or to the community
     ix. Local medical officer and other key person cooperative
     x. Non-governmental organization involvement

Programs, conditions, situations, and approaches vary among medical education institutions so that not all issues are equally important for every institution. The specific criteria considerate and the weight given to each issue need to be adjusted according to each individual institution’s specific learning objectives, budget, and feasibility.
A computer spreadsheet can be easily created and used to help make such selection decisions. Certain issues such as safety and security risks may be so important that some communities will be excluded from consideration no matter how otherwise attractive they might be.

Tips to find good public health nurse (local health personnel):

- Ask the local hospital if they know one.
- Ask the local people.
- Look for a community with a good or creative health management projects through the Health Ministry’s public reports or newspaper or television.

**Community Orientation**

The purpose of community orientation is to assure that the community members and leader are aware of and if necessary preparation for the medical students’ visit to their community. This is important as it will ease some of the difficulties that the student will face when entering into the community.

After the selection of a community, CBME faculty will have to contact the local community leader. This can be done directly or through the local health care facilities or organizations. Good relationships with the local community leaders are important, their understanding is important for conveying the purpose of the visit to other community members. Important points to be made and clearly explained at a meeting with community leaders or a community administration team include:

- Purpose of the students’ visit(s).
- What are the things that the students are supposed to do in the community, and why?
- What is needed from the community?
- What are the benefits of these visits for the community and for the student as future doctors?
- What possible problem disadvantages might be associated with these visits?

**Student Orientation**

Before the go to the community, students should know what is expected of them and what to do and expect when they are in the community. Student orientation activities and material are means of assuring that they do.

What is expected of the students?

1. Each student should go into a community with an open and observant mind. They should observe and constantly think about possible reasons why certain things happen and are or are not done in the community. An instruction sheet with questions can be useful. Here are some of the example questions;
   - What is the most interesting thing you find in that community? And explain what made that thing exist or happen?
• Is there any health-related problem in the community that might be due to or associated with “development”?
• Is there a way to find a solution to a health-related problem in the community that is economically feasible, culturally acceptable and environments friendly?
• Are community leaders, members, are others considering these (SD) factors in their decision, plans, and actions?

2. Each student should go into the community with great respect for the people within the community. Students should be informed about culturally unacceptable behaviors and culturally sensitive issues for the community. Ethical consideration such as privacy and confidentiality should be emphasized.

Basic information about the community that could be useful to the student

• Location, history, languages, economy, culture, environments and development of the community
• Health and health services information
• Community infrastructures such as safe water and food sources within the community, roadways etc.
• Climate and dress code
• Faces and names of important community leaders and relevant health personnel.
Examples of community projects

#1: Balanced diet exercise, Muhimbili University of health and allied sciences, Tanzania

Medical students are given a community-based assignment as part of their community health education. One of the assignments the students are expected to perform is to prepare a meal which provides balanced nutrition for a certain number of household members, with a budget limit of 1000 TShs (equivalent to 80 cents of the US$). Students are usually divided in groups, and each group decides what type of meal to prepare, e.g. a meal for a toddler or lunch for two adult family members.

Students are expected to prepare the meals using ingredients obtained from local markets. The aim of this exercise is to enable students to understand what food materials are locally available, how to prepare balanced meals using them, and what challenges that presents, so that when they are giving health advice/education on nutrition they will take into consideration what is available locally and how one can provide a balanced diet in such settings.

In the context of ESD this project can be modified so that students will be tasked to do a survey in a community to identify what food products are available and then work with that community’s members in combining these products in the preparation of balanced meals.

#2: Village visit, Khon Kaen University, Thailand

As a part of their education, third year medical students in Khon Kaen University, together with Allied Health Science students, go to a village where they remain for ten days. After community assessment, community meeting the villagers and the students found that the community had lots of garbage and decided to create a housing sanitation contest. The students and the villagers started a housing sanitation campaign and one big cleaning day. On the big cleaning day students, local children, and other villagers collected garbage. The students introduced ideas of the waste management to the villagers. The wet trash, such as food waste, was used as fertilizer using effective microorganisms (EM) as catalyst. The dry trash was buried at a community selected sited (in a lowland area of the village).
Examples of faculty-relevant ESD teaching anecdotes/stories

Dr. Eugene Boostrom & Dr. Sumiko Ogawa
Meio University, Okinawa, Japan

#1: Sustainability in a presentation on Global Infectious Diseases

In 2005 we were invited by JICA in Okinawa to make a presentation on Global Infectious Diseases to foreign graduate students from universities all over Japan. We incorporated sustainability concepts. We linked certain infectious disease risks and control problems to global warming and to human penetration into and encroachment on various ecosystems and discussed the idea that mankind itself, on a global scale, is having impacts that have characteristics of an infection or cancer of planet Earth itself. We also linked loss of biodiversity with loss of species that could provide new medications.

#2: Sustainable Development featured in Meio University’s Public Seminar Series

Our university (Meio, in Northern Okinawa) invited faculty proposals for public seminars for local (Nago City and Northern Okinawa) people. We proposed and held a series of seminars in 2007 and 2008 on “Sustainable Development (and Eco-Tourism) in Northern Okinawa”, and ecologically rich and sensitive area which faces various threats. Key messages and approaches drew from Complexity Science and especially from the international Resilience Alliance (resalliance.org) and the book Panarchy. We also introduced and demonstrated solar cooking on the workshops’ overnight camping trips to Northern Okinawa along with ecosystem tours and river and sea kayaking experiences.

#3: Sustainability teaching in a Nago City Community Center (Kominkan) workshop on Solar Cooking

Nago City Community Center (Kominkan) in Northern Okinawa invited us to organize and present a one-day Solar Cooking workshop in December 2008. We developed it as a demonstration and Do-It-Yourself event beginning with a presentation on the ecological sustainability and social, economic and health (pneumonia-reduction) benefits of solar cooking in various development situations. Father-child pairs were the target audience, although Community Center staff also actively participated. Participants fabricated their own solar cooking reflectors (of the simple, internationally-promoted cardboard and aluminum foil “CooKit” type used in some refugee camps) and black-painted covered cooking vessels and supports. They then each mixed and successfully solar-baked a cake in their own device. We ate the cakes for dessert after first consuming solar-cooked dishes from Thailand, Africa and Brazil which we had prepared as demonstrations during the workshop. Several hundred grade and junior high school students observed the outdoor proceedings with interest while at the center for other reasons. Press interviews resulted in two separate front-page articles in a major prefectural newspaper.
#4: Incorporating sustainability concepts in our teaching at university, local, national and international levels

In teaching public health and epidemiology, health project planning, etc, at universities in Okinawa and Hokkaido, for JICA in Okinawa and elsewhere, and at the National Institute of Public Health, we regularly introduce sustainability and sustainable development considerations. For small groups, we frequently also demonstrate and discuss solar cooking as a beneficial and cost-saving tool for health, nutrition and environment, useable at the community and family levels.
### Decision-Aid Spreadsheet for Community Selection for CBME Activities

**Dr. Eugene Boostrom, Meio University, Okinawa, Japan**

<table>
<thead>
<tr>
<th>Criterion/Issue</th>
<th>Maximum Points</th>
<th>Community A</th>
<th>Community B</th>
<th>Community C</th>
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<tbody>
<tr>
<td>Distance from university</td>
<td>10</td>
<td>≥ 200 km</td>
<td>100-199 km</td>
<td>10-99 km</td>
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<tr>
<td>All-season accessibility</td>
<td>10</td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
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<td>Safety &amp; Security</td>
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<td>Poor</td>
<td>Fair</td>
<td>Good</td>
</tr>
<tr>
<td>Last time visited for CBME</td>
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<td>5 years ago</td>
<td>2 years ago</td>
<td>1 year ago</td>
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<td>Receptive community</td>
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<td>Good</td>
<td>Fair</td>
<td>Poor</td>
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<td>Languages spoken in the community</td>
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<td>Student native language</td>
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<td>Community Leadership strength</td>
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<tr>
<td>Community Organization</td>
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<td>Poor</td>
</tr>
<tr>
<td>Community health initiatives</td>
<td>5</td>
<td>Fair</td>
<td>Good</td>
<td>Poor</td>
</tr>
<tr>
<td>Health facilities availability in or accessible to the community *</td>
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<td>Fair</td>
<td>Good</td>
<td>Poor</td>
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<tr>
<td>Local medical officer cooperative</td>
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<td>Good</td>
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<td>Non-government organization involvement</td>
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<tr>
<td>Rank</td>
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<td>2</td>
<td>3</td>
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</table>

*Types of facilities, quantity, access, or some combination could be added as criteria.*

Above is a draft example of a decision-aid spreadsheet for selecting among communities. The original draft version (shown below in a screenshot) was developed in a commercially available software program, Decision Pad 3 (Apian Software). The version presented above was revised from that by workshop participants who would prefer (mainly due to software costs) to develop a spreadsheet-based decision aid for community selection. In the spreadsheet cells below each alternative (community), a numerical value (number of points, according to an agreed scale, out of the possible total points shown to the left for the corresponding “criterion”) would be assigned according to each level or label value. Formulas would be included in the spreadsheet to automatically calculate the total points and ranking for each alternative (each community) in the bottom rows of the spreadsheet. That has not been done in this draft example developed by some of the workshop participants as an illustration.
In the spreadsheet example above, the hypothetical rankings, combined with the requirement for at least “fair” safety and security, would suggest that Community B be selected among the three. Even if community A had the highest overall points and therefore ranked number 1 on that basis, it would be automatically disqualified due to the unacceptable (“poor”) level of safety and security. (Such matters are readily specified, modified and handled in the commercial software, and they could, with some skill, be “programmed” into a spreadsheet-based model although they could also simply be noted in the spreadsheet and separately considered by its users. Decision Pad 3 also handles missing data and provides rankings and possible score ranges based on any partial data, which is useful and especially helpful when data are incomplete.)

Screenshot of the main matrix of a decision aid for the selection of communities for Community-Based Medical Education activities (developed using Decision Pad 3 from Apian Software)
APPENDIX C

MATRIX OF ACTIVITIES/CHANNELS AND TARGET GROUPS FOR INTEGRATING SUSTAINABLE DEVELOPMENT (SD) CONCEPTS AND PRACTICES INTO COMMUNITY-BASED MEDICAL EDUCATION (CBME)
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MATRIX OF ACTIVITIES/CHANNELS AND TARGET GROUPS FOR INTEGRATING SUSTAINABLE DEVELOPMENT (SD) CONCEPTS AND PRACTICES INTO COMMUNITY-BASED MEDICAL EDUCATION (CBME)

Dr. Eugene Boostrom, Meio University, Okinawa, Japan

This matrix is intended to help CBME faculty to consider and make decisions regarding how to integrate sustainable development concepts and practices into community-based medical education. It should be adapted to help meet the needs of specific programs. The developers of the matrix welcome comments and suggestions to improve it and to make it more usable and appropriate, especially those based on experience in using it.

The “target audiences” are key groups with whom CBME faculty need to communicate and interact in their efforts to introduce and apply SD in their CBME.

- High university officials will often need to be informed of the importance and rationale for incorporating SD in CBME, and at times they will need to approve or support related CBME proposals, plans, programs and activities. Some may take also come to support SD and introduce and implement it more broadly.

- Non-CBME faculty (mainly within the medical school but also non-medical faculty) will sometimes need to understand and hopefully agree with and support CBME and the integration of SD into CBME. Some could also come to introduce SD considerations in their own teaching, decisions and actions.

- Some CBME faculty members are expected to take and lead initiatives to integrate SD in CBME. Other CBME faculty, however, will be initial and continuing targets for related communications; most will need to become (sooner or later) key supporters and implementers of SD in and through CBME.

- Medical students are the key target group of CBME and of SD within and supported/implemented by CBME. It is important that all of them come to understand the basic concepts, implications and importance of SD, and their CBME experiences should help them achieve that. With effective integration and implementation of Education for SD (ESD) in and through CBME, many medical students should come to give consideration to sustainability in their own lives and as health care providers, and as opinion leaders and trusted sources of information they could also become important advocates of SD. Those who will work in community settings, especially, will have ample opportunities to communicate SD concepts and their implications in their dealings with patients, communities, and their problems and decisions.
Communities themselves, including today’s and those of future generations, are the ultimate beneficiaries of the integration of SD concepts and actions in CBME. Because CBME is by definition community-based, both CBME faculty and students will have constant opportunities to convey SD concepts to community members and leaders and to help them to recognize SD’s importance, make appropriate decisions, and take appropriate actions. They will also benefit from doctors’ ongoing application of SD concepts in their healthcare practices and their dealings with and support of the communities.

The left hand column of the matrix presents an eclectic mix of communications, teaching/learning and “community studies/organization/development” activities and tools which are expected to be useful in integrating ESD in CBME. They are divided horizontally into three categories. The categories appear in the order in which we expect the SD concepts will be incorporated and implemented in CBME. However, the last category, activities “with communities”, is expected to be most important in its impact on both students and communities, followed in importance by activities “in communities”. Effective ESD and SD in and through CBME must be -- Community-Based!

We present first an “empty” matrix form, followed by a filled-in example. The example deals with what we consider to be the key core ESD message to be conveyed and applied in and through CBME, that “We can improve health more effectively (especially long term) if we assure that what we do now does not reduce resources and opportunities for others in the future.” Because it is a key message, the checked boxes probably represent the maximum set of boxes that would be checked for any “SD in CBME” communication or activity; that makes it a good example and starting point for those interested in adapting and using the matrix for thinking, decision making, planning or monitoring.
<table>
<thead>
<tr>
<th>ACTIVITIES/CHANNELS</th>
<th>High Univ. Officials</th>
<th>Faculty Members</th>
<th>Medical Students</th>
<th>Community</th>
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CORE MESSAGE: “We can improve health more effectively (especially long term) if we assure that what we do now does not reduce resources and opportunities for others in the future.”

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**OUTSIDE OF COMMUNITY**

**IN COMMUNITY**

**WITH COMMUNITIES**

| Mutual Introduction        | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Mutal Presentations        | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Information Provision/Exchange | X            | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Joint Visits               | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Village Stay               | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Interviews                 | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Focus Groups               | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Situation Assessment       | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Problem Identification/Definition | X            | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Values Clarification       | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Goal-/Priority-Setting     | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Planning                   | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Action Project             | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Evaluation                 | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
| Electives                  | X                | X           | X       | X       | X           | X       | X           | X       | X           | X       |
APPENDIX D

Education for Sustainable Development: The Big Picture (Power Point Slides)
Education for Sustainable Development (ESD)

The Big Picture

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Sustainable Development (SD)

Definition
“Development that meets the needs of the present without compromising the ability of future generation to meet their own needs.”

UN, World Commission on Environment and Development, 1987

SD Requires Balancing

- Environmental sustainability
- Economic sustainability
- Sociopolitical sustainability


“Basic Principles” of SD

- Intergenerational equity
- Gender equity
- Just and peaceable societies
- Social tolerance
- Environmental preservation and restoration
- Poverty alleviation
- Natural resource conservation

Scheme of sustainable development: at the confluence of three constituent parts
UCN, 2006

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Education for Sustainable Development

**ESD**

**Definition**

"Is a vision of education that seeks to empower people to assume responsibility for creating a sustainable future"

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UNESCO, 2005

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ESD

**ESD Leads to change in behavior**

- Four areas of action for ESD:
  - Improve the quality of basic education
  - Reorient existing education programs to address SD
  - Develop public awareness and understanding of SD
  - Provide training for all sectors of private and civil society on SD

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UNCED, 1992

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ESD the Challenge

**Economic Growth & Increased Consumption**

↓ Negative Effect

**Sustainable Development**

↑ Positive Effect

**Education**

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Key stakeholders in ESD

- Governments and intergovernmental bodies
- Mass media
- Civil society and non-governmental organizations
- Private sector
- Formal education institutions

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What are the core skills of ESD?

- **Envisioning**
  - Being able to imagine a better future

- **Critical thinking and reflection**
  - Help people learn to examine economic, environmental, social, cultural structures in the context of SD

- **Systemic thinking**
  - Looking for links of strategies when trying to find solutions to problems

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What are the core skills of ESD?

- **Building partnerships**
  - Promoting dialogue and negotiation, learning to work together

- **Participation in decision-making, empowering people**

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Cont.-
Decade of Education for Sustainable Development DESD

- Proposed by 45 countries led by Japan
- Offers an opportunity to build education and communication into national SD strategies
- Make education an integral component of SD at the national level

World Summit Sustainable Development, WSSD, 2002

Objectives of the DESD

- Facilitate networking linkages, exchange and interaction among stakeholders in ESD
- Foster increased quality of teaching and learning in ESD
- Help countries make progress and attain the Millennium Development Goals through ESD efforts
- Provide countries with new opportunities to incorporate ESD into education reform efforts

ESD and Medical Education

Basic Questions:
1. Is it really a new concept or a new paradigm?
2. Why is it important?
3. Is it relevant to medical education?
4. Is it a responsibility of the medical professionals?
5. What are we doing in medical education which could be related to ESD - The present?
6. What should we do to introduce the concept of ESD in medical education - Suggestions for improvement?

Good Examples of ESD

Communities
- Encourage and Empower communities to take action about their own lives
- Interact with government bodies and NGO in eliciting change in areas such as education and environmental protection
Formal Education

- Use the school as a main centre of learning for the community
- Use the community as a learning resource of the school aiming at improving quality of life

Training and Research

- Participate in action research or learning by doing to:
  - Find solutions for current problems
  - Innovate for alternatives to people's current lifestyles

Good Examples of ESD - Continued

Training and Research - Continued

ESD in the Community

- Challenge people's values & belief system
  - Through Discussion and Dialogue
  - To ensure Whole community is able to learn together
  - Towards Common vision of a sustainable future
  - For Action: Individual and Joint

The Challenges

- To bring different stakeholders together, collaborate in partnerships to find a balance between their interests and priorities
- ESD is the best based on “learning by doing”
  - Learning What?
  - Doing What?
- Each cultural / societal group will choose ESD in the context of its own aspirations for SD, no “one-size fits all”

Summary

- Education is key for Sustainable Development
- Sustainable Development as a concept should be addressed in all phases of education, schools, universities and beyond

Summary - Continued

- Graduates should acquire some core skills of ESD
- Medical colleges should incorporate principles of SD in their programmes to
- Community-Based Medical Education is a natural learning environment for SD
The International Cooperation Initiative has been established by Japan’s Ministry of Education, Culture, Sports, Science and Technology (MEXT) to support and promote international cooperation by utilizing the experience and knowledge of Japanese universities. Its activities include fostering innovation and the implementation of new educational models and developing reference materials.
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