Towards Better Environmental Sustainability Practices

Methods and Processes

to support Change-Oriented Learning

April 2008

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CAPE ACTION FOR PEOPLE AND THE ENVIRONMENT
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We hope that this booklet will have value as a stand-alone resource, and that it can be used beyond the C.A.P.E. programme and the Cape Floristic Region. We welcome critical and constructive comments to inform the revision of further editions.

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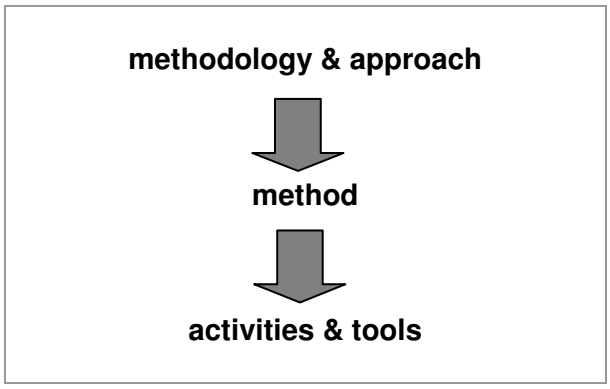
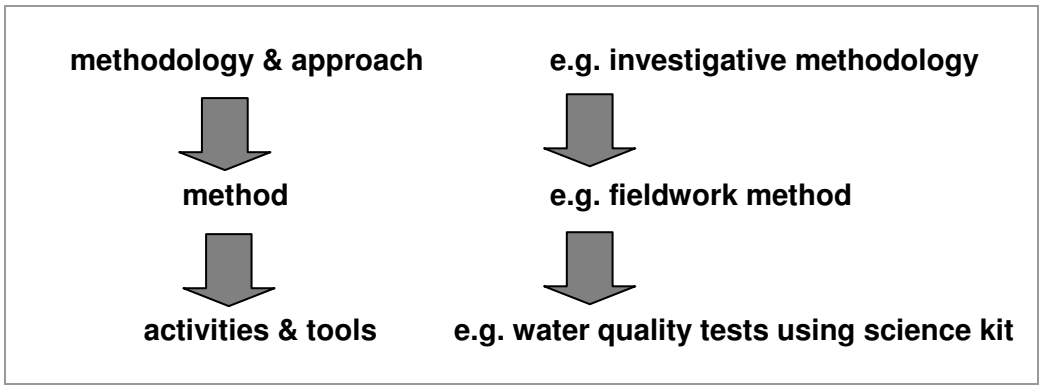
A Note on Terminology

It is easy to get muddled when deciding whether to call a particular educational process a method, an approach, an activity or a methodology. These terms are used in different ways in different contexts. We have decided on the following use:



- Educational *methods* are collections of *activities* which coherently 'hang together' to serve a particular educational purpose. So fieldwork in a wetland, for example, is a method which could consist of various activities: an ecosystem study (constructing a food web), a water pollution test, a biodiversity audit and general observations, all aimed at understanding how wetlands function.



- The way in which an educator approaches a method, including her underlying assumptions about how it works and why, can be called the *methodology* (her understanding of the method). So, for example, we refer to a *participatory methodology*, in which an educator can take a participatory approach to using the fieldwork method, informed by an understanding and intent to empower learners by involving them in the design and application of scientific investigations. Methodologies developed in particular social, institutional and historical contexts, and we often transfer them to other contexts where they might change.

This is not a perfect classification system, and you may prefer to use different terms. What is important to note here, is that:

- there is not simply one right way or set of definitions; and
- the term 'methods' is really a short-hand for broader methodological processes – not for a neat package with recipe enclosed!

For more on how we label and use methods in this publication, see pages 5-8.

Expanding Methodological Frameworks

Over time, environmentalists and educators became concerned about the need to do more than simply raise awareness about issues, or provide learners with fun experiences. They developed and started drawing on a broader range of methodological processes. Thus today we have a richer array of methods from which to choose. All these methods can be appropriate – depending on the situation, the educational purposes we want to achieve, and how we use them. Often, we would use a number of different methods in a programme, workshop, course or lesson.

Why is it wise to use a range of methods and processes?

Firstly, learners have different learning styles. In any group of farmers, or water users, or school children, there will be a diversity of learners. Some of them will learn better from some processes (such as reading case studies) and others will respond better to other methods (such as hands-on exploration). Using a variety of methods increases the chances of everyone learning.

Secondly, a variety of methods allows us to address a variety of educational purposes and outcomes. Environmental learning is, among other possible learning outcomes, about:

- **Coming to understand one's world better**
- **Gaining the skills and values to live well within it**
- **Awareness or sensitisation to issues and possibilities**
- **Gaining information and new insights**
- **Un-learning certain perspectives**
- **Recognising and reconstructing the frames through which we look at the world**
- **Seeing a growing array of possibilities to act**
- **Shaping better sustainability practices**
- **Action competence, agency and commitment to care.**

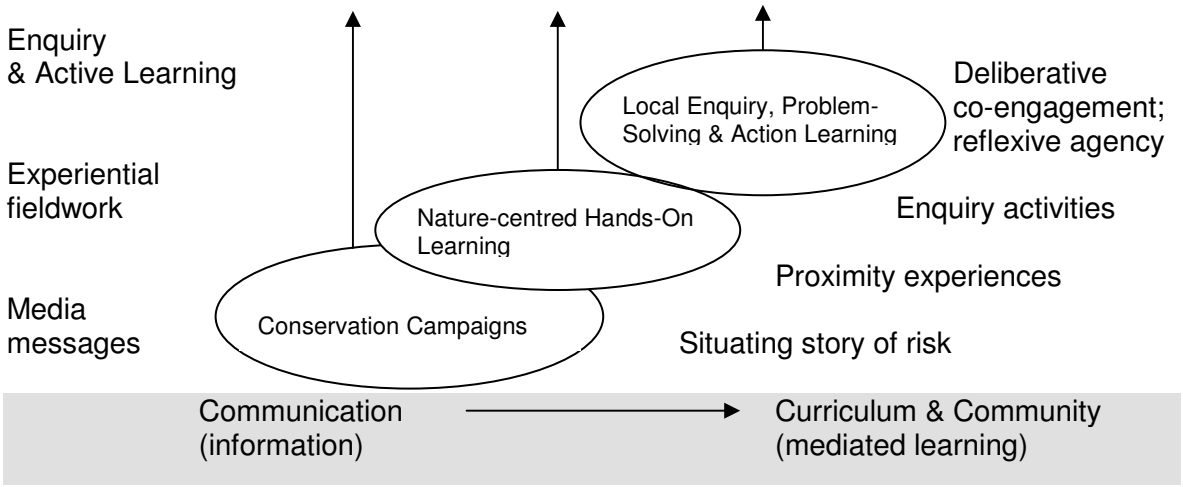
While a particular method can often address more than one such educational purpose, a broader range of different kinds of methods generally helps us to address a broader spectrum of environmental learning outcomes.

Consider the range of educational processes depicted in Diagram 1, which the C.A.P.E. CEP has identified as being used by educators in bioregional initiatives. Consider an environment and sustainability concern that is particularly pertinent in your work context. Now, consider how in your practice, you could:

- find out, with learners, what is being done and what is already known
- survey local landscapes and change with regards to this concern
- audit biodiversity (or resource use, if more relevant)
- investigate ecosystem services and human livelihoods
- assess the likelihood and extent of issues and risks
- deliberate what can and should be done better (Diagram 1).

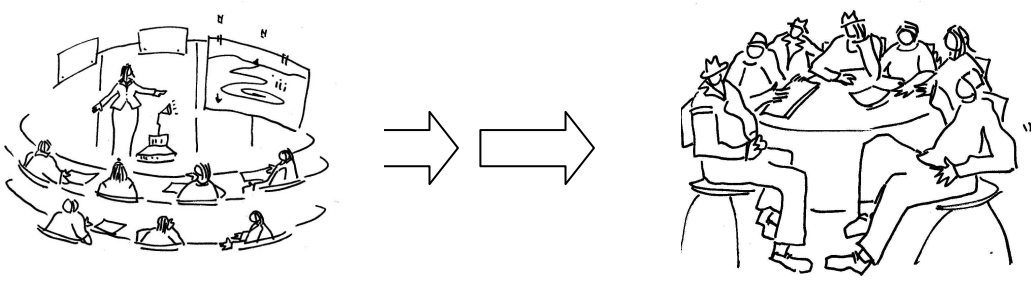
Diagram 1: Biodiversity Education Practices (C.A.P.E. Conservation Education Programme, 2006)

Diagram 2: A Broadening Suite of Teaching and Learning Interactions



In the original from which Diagram 2 was adapted, O'Donoghue (2007)[1] shows how, over time, educational interactions have shifted from being predominantly *communications*-driven (the one-way transfer of information and messages) to becoming more educational; '*curriculum'* in the sense that a range of interactive teaching and learning interactions are being used *educationally* to mediate learning, even outside the formal school setting, for example among water users. One-way communications approaches are still widely used (e.g. in social marketing campaigns to raise awareness about energy issues), but they are increasingly broadened into more interactive and open-ended methods, towards building actively learning *communities* with common concerns and the ability to act on them.

The suite of learning interactions on which environmentalists draw have thus expanded from media messages and situating stories of risk (for example, a video on global warming) to include experiences and enquiries (such as field work on local air pollution) and increasingly, deliberative co-engagements with issues and risks, to come up with local responses (local actions to reduce air pollution, or the community's vulnerability to global warming). Today, all these methods are being used for environmental learning towards better sustainability practices. Along with our broadening range of methods, our educational intent (purpose) is starting to shift. Early awareness campaigns and nature experiences have been mostly concerned with *getting to people*. Environment and sustainability education processes are increasingly also about *getting people together* (forming communities) to engage concerns, and work and learn with each other, to foster better sustainability practices.



[1] O'Donoghue, R. (2007). Environment and sustainability education in a changing South Africa: A critical historical analysis of outline schemes for defining and guiding learning interactions. *Southern African Journal of Environmental Education*, Vol. 24.

Using Methods with Educational Intent

We have various purposes when choosing methods. We want a change of pace to the school week, to energise a group after lunch, or to spend the last of our budget on a trip! We also have a particular educational purpose and it is this intent which should most strongly inform which method we choose and how we use it.

In the directory section (p. 7 onwards) we have grouped a sample of methods according to their main focus: Is it focussed on transferring information? Is it mainly about enquiry / investigation? Is it mainly aimed at providing an experience, or focussed on deliberating a new way forward? *Most methods serve more than one of these purposes*. They can also serve different purposes, depending on how we use them.

How we choose and use methods is influenced by:

- **Our view of education** – is education about getting to others to change their behaviour? Is it about getting people together for collaborative learning and action? Is it about transformation, or about maintaining the way things always were?
- **Our views on knowledge** – is knowledge fixed and certain, something to pass on? Or is it dynamic, co-constructed and open to change?
- **Our views on learning and learners** – are they empty vessels to fill? Active minds eager to make sense of something? Co-learners? What is the educator's role? And how do we learn?

Many theories have been developed to explain learning. While all have something to offer, some are more useful to environmental educators than others. Over time, we have looked not only at outward behaviour, but at values and ethics, and at the cognitive (thinking) processes through which learners construct or make meaning. We have also looked at the ways in which people learn *by doing* (as opposed to learning *to do*) and to the social factors (such as language, discourses, voices, situations, context and community) which shape learning. Increasingly, we are drawing on social learning theories, which provide explanations for how our understandings and practices are shaped as socio-cultural groups, and how we can use or design social processes which encourage collective learning and social change.

Individual Learning → Social Learning

How do we plan a good educational programme or lesson? One way of constructing a coherent learning experience is to build in opportunities for '*touching'* (learner encounters which create a sense of connection or proximity – "this matters"), *talking* (even if the talk, dialogue or meaning-making takes place in the learner's head), and *thinking* or reflection (Diagram 3, O'Donoghue, 1993). The focus of the learning interaction holds the *encounter*, *dialogue* and *reflection* processes together. This focus may be an issue to which the learners are being introduced (e.g. global warming) or an action in which they are involved (e.g. clearing of invasive aliens).

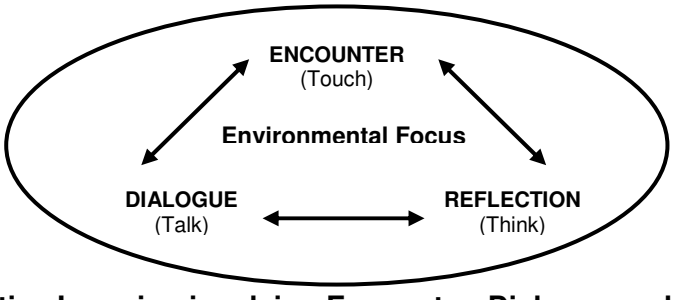


Diagram 3: Active Learning involving Encounter, Dialogue and Reflection

With an educational purpose in mind, we are careful about how we *combine* methods for a *coherent* teaching and learning interaction. Diagram 4 shows another way of framing a selection of methods (or activities) which work together towards the learning outcomes we have in mind. The process can start anywhere – with an enquiry, an action or a reflection on something that was learnt previously.

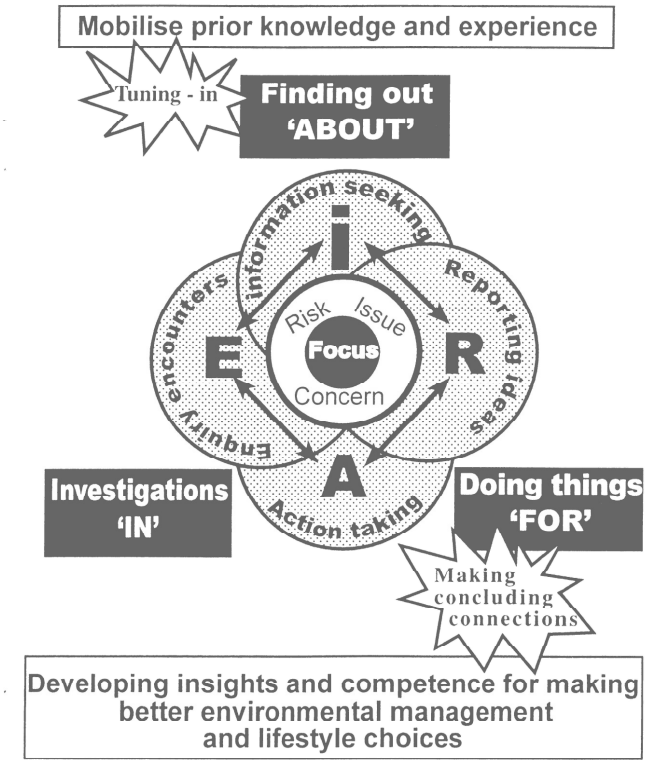


Diagram 4: A Framework for Active Learning involving Enquiry Encounters, Information Seeking, Reporting and Action Taking

For example, a youth leader wants to teach about electricity consumption, the environmental impacts of energy production, and what can be done to reduce electricity consumption. He starts by finding out what the youth already know, and shows the relevance of the topic, by discussing a newspaper article on recent power cuts. Then he sets them a task, to audit electricity use at their homes, to further establish the relevance of the topic to these learners (*enquiry encounter*) and help them find out more. He also provides new information about the impacts of electricity production that he obtained from an environmental NGO, and asks learners to summarise the key points (*information seeking*). With his help, the youth then analyse and compare the data from their home electricity audits and draw graphs (*reporting*). The leader leads a group discussion to identify ways of reducing electricity wastage in their daily lives, and the learners make notices to remind them to turn off lights and appliances (*action taking*).

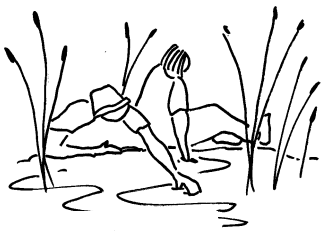
Here the order of activities is not so important. What is important is the coherent combination of activities. Note especially the inclusion of opportunities for consolidation (making concluding connections) and reflection about better sustainability practices: Simply lining up a selection of fun and challenging activities is not enough, as learners may simply go through them rather mindlessly unless they have opportunities to 'join the dots' and reflect on the meaning of what they have done, and what they have learnt.

All the diagrams in the preceding section are presented as broad frameworks to guide educators. They should not be seen as static 'models' that prescribe exactly how things

should be done. You are encouraged to explore the potential of these methodological frameworks and draw on the diversity of methods presented in the next section of the book, as well as many others not mentioned here, when designing your programmes.

Directory of Methods

In the directory section which follows, the methods are grouped in five broad and overlapping categories:

Information Transfer Methods	
Experiential Methods	
Investigative Methods	
Learning by Doing	
Deliberative Methods	

Most methods fit into more than one category. For example, action research and community problem solving is a way of finding out (*investigative*) and it is a *deliberative* method (involving participatory reflections and decision-making). In fact, most methods, if used well, involve some kind of deliberation!

The methods are nonetheless grouped in this way, to *highlight that methodological processes support particular educational purposes*, which can be related to the broad educational objectives or learning outcomes outlined on p.2. Each method has been

grouped according to the educational purpose which it seems to support *most strongly*, particularly in the ways in which the method is most commonly used by environmental educators.

Also note that:

- Some educational methods (practices and processes) may not have a 'label'.
- Some methods you use may not appear here, or may appear under a different label. In different contexts, different names may be used for similar processes.
- Conversely, the same label can be used for very different processes, depending on the methodological frameworks being applied.
- Methodological frameworks explain the 'theory behind' the method and how it is supposed to work. Sometimes methods are used without any methodological thinking!
- Methodological frameworks have developed historically, in relation to particular contexts and theories about teaching and learning. Over time, we have re-used and re-interpreted them in our own contexts. Today, we particularly emphasise active and interactive meaning-making processes and deliberations, towards an open-ended range of environmental learning outcomes.

It is useful to realise that a method which is described by one name, can give rise to very different educational processes, because it be used in different ways, drawing on different assumptions, by different educators. The context in which a method is being used, also affects how it plays out. Perhaps an educational method is simply the interactions between an educator and her assumptions (which are shaped among other things by the community in which she practices), a particular learner group, and a particular situation. It is certainly not a recipe with ingredients and steps which, if faithfully followed, will result without fail in a pre-defined outcome. To talk about 'methods' is therefore a bit misleading; we are actually talking about (more fluid, open-ended) processes.

The directory provides a brief description of each of the selected methods (or processes) and some typical examples of how it has been used in a number of contexts. It suggests some additional educational possibilities and also notes some of the pitfalls which we can fall into when we use these methods.

In some cases there is also some information about the contexts in which a method historically developed, and into which it has been adapted, although this is greatly simplified. We try to highlight diverse assumptions (theories) which can underlie the way an educator uses a particular method, and which would therefore shape the approach taken. By looking at these underlying ideas, discussing them with colleagues, and if possible dipping into more comprehensive texts, practitioners can deepen their understanding of educational processes. This could help us to reflect more critically on our practice and talk more confidently about it, and design environmental learning interactions more critically and creatively.

The directory illustrates only a small sample of the diversity of methods in use to support environmental learning, in a wide variety of contexts.

INFORMATION TRANSFER METHODS

awareness and social marketing campaigns

By this we mean … Campaigns, big or small, to raise awareness among people about particular issues and what can be done about them, by passing on information, often in 'bite-sized' chunks, or as messages. Mass communication media are often used.

Typical examples … Stickers saying 'Every drop counts' placed next to taps in public toilets; health warnings – 'Smoking Kills!' - on cigarette packets; radio announcements with information and messages by government departments during National Water Week; a leaflet about a new bioregional programme distributed at schools and shopping centres; a poster about the dangers of pollution put up by the Blue Flag programme at beaches during the holiday season; bill boards calling young people to think of their future and prevent the spread of HIV infections.

Underlying ideas … The basic assumption is that people do not know about issues that they should know about, or tend to forget about them, and that by bringing the issues to their attention, people will be moved to act on them. Because this is such a widespread assumption among environmentalists, in government agencies and in NGOs, this is probably the most widely used method to encourage environmental learning and action.

Pitfalls:

- Unfortunately, awareness does not always lead to new actions (note for example the spread of HIV infections despite greater awareness). Often people are quite aware of an issue, but other factors prevent them from successfully acting on it.
- People may reject messages and messengers for various reasons, e.g. they may not identify with them, or the messages may be too extreme, causing uncomfortable dissonance which in many cases leads people to simply ignore, question, ridicule or dismiss the information.
- People may not know how to act on worrying information, and this can cause anxiety or apathy. Research has found that children who are very aware of environmental issues but feel hopeless to do something about them, can become depressed. They may also simply retreat into an electronic world (cell phones, Internet and computer games) over which they might have a little more control.
- The messages about what is wrong and what needs to be done may be too simplistic, or not suitable for all contexts. For example, a South African water conservation awareness campaign sent low-flow shower heads to areas where people don't have showers.

Possibilities:

- While it is important to share information widely, it is vital to also engage people in deliberative processes to work out what can and needs to be done in particular contexts. Follow up awareness campaigns with practical projects, workshop collaborations, phone-in programmes and other opportunities for people to engage and become joint developers of solutions. (See Social Learning and Participatory Methods.)
- Develop 'messages' and ideas about solutions with affected people, so that they reflect a broader range of realities. (See Dialogic Cartoons and Programmes.)

Complementary methods: Case Studies and Field Work to develop deeper insight; Action Research and Community Problem Solving and Social Learning Methods to work out solutions.

talks and presentations

By this we mean … presenting a body of knowledge or selection of information through a structured verbal and visual presentation.

Typical examples … A conservation officer giving a slide show and talk about biodiversity loss; an industry trainer giving a powerpoint presentation about energy-efficient production to managers; a teacher giving Geography students a lesson on veld types; an extension officer talking to farmers on problem animal control at an open day.

Underlying ideas … Historically, much of the teaching in universities and schools has taken place through the transfer of information in lecturers and lessons. Talks and presentations are also popular in less formal settings such as science fairs, expos, special interest clubs and so on. The assumption is that the audience are motivated to learn and have the skills to interpret and later apply what they have learned. It is indeed valuable to hear from someone who is an expert on a particular topic, or at least knows more than us, and who has the ability to provide this information in an engaging manner, perhaps with pictures, diagrams and demonstrations (see later). It is also recognised that inputs of new information are essential for learning to take place – we seldom learn more by simply expressing what we already know, and often our peers also don't know much more than we do. Over time the dominance of the one-way, passive transfer of information has however been questioned (see below).

Possibilities and Pitfalls:

- If well structured and executed, the presentation of information in verbal and visual format can be very effective. It is particularly useful for sharing relatively simple, factual information, or a particular perspective, to a large group of people in a relatively short space of time.
- Talks and presentation can be useful at the start of a learning process when it may be necessary to provide background information, clarify concepts or introduce a specific focus. On the other hand, children who are often lectured to, or adults who do not fancy themselves being 'back at school', may be 'turned off' by a lengthy, top-down and content-laden introduction.
- People can learn well in focused situations (such as lectures) as there are fewer distractions. This can also mean that people can 'go to sleep' more easily, if the information is not presented in an engaging way, and when there is no opportunity for an audience to ask questions or otherwise interact with the content presented.
- Talks and presentation are less time consuming than participatory methods, and easier to manage. They are popular with inexperienced staff.
- One-way communications can cause or reinforce power imbalances as the power is usually with the presenter, particularly if he or she bombards audiences with technical information, and negates their own understanding of matters. The audience may be left feeling apathetic or rendered unable to take action, by the 'outside expert'.
- With the recent emphasis on active and social learning, delivery-type methods have come to be questioned. On their own, these 'passive' methods do not support active learning unless complemented by more interactive and participatory methods. However, one-directional, focussed can be used very effectively in participatory or active learning frameworks when used in conjunction with other methods and tools. It is important to value the input of new knowledge.

Complementary methods: Demonstrations and models, Guided questioning, Projects, Case studies, Field work, Field trips.

demonstrations & experiments

By this we mean …. using models or prepared experiments to introduce, 'prove', reinforce or clarify information and concepts.

Typical examples … The display room at an educational centre contains a functional model of how the wetland outside operates as a water-purifying system. The model is made to scale and contains all the features of a typical wetland. When water is poured gently from the top, one can watch how the water trickles through the filtering layers of reeds and clay. … In the science classroom, a teacher sets up an experiment to test/demonstrate how plant growth is affected by light. Three seedlings are positioned around the classroom: one in a dark cupboard, another in full light, and the third in a box with light entering from one side. Over a few weeks, learners observe and record the effect of light on these plants. … At the agricultural college, extension officers show students two section of the orchard: where weeds have been controlled with herbicide, and where some weeds have been allowed to grow to improve water penetration.

Underlying ideas … 'Seeing is believing' – while an idea or a new practice or technology can be explained in words, in the abstract, it is far more powerful when actually visible. In agricultural research and extension there is a long history of using demonstrations and experiments, over time involving farmers and master farmers more in doing some of the experimenting themselves. In the science classroom, too, this is a tried and tested method, which has also found its way into many centres on nature reserves. Here models and experiments are educational tools to scaffold the development of complex concepts. They simulate real-life situations or conditions. Models and controlled experiments are usually easily observable and can be repeated. This makes it easier for the educator to focus learners' attention on a few selected features or concepts; in real-life situations (such as an actual wetland) there may be other distracting features – or the actual workings may not be easily visible.

Possibilities:

- Learners can make their own models to reflect their understanding of how something operates.
- Through models and experiments, and particularly by setting up their own, learners can develop a sense of enquiry and develop skills of observation and prediction.
- Learners devise their own experiments to develop enquiry skills and stimulate curiosity (see e.g. Learning Outcome 1 of Natural Sciences, and Life Sciences).
- Farmers develop their own experimental plots to test more sustainable practices, e.g. harvesting rates for fynbos, or organically grown vegetables or pastures.

Pitfalls:

- Educators may assume that learners have made the connection between the model or experiment and the real world, when in fact they might not have.
- Make sure that everyone can see the demonstration, even the shorter people or those at the back!
- Conducting laboratory-based experiments or looking at models are usually very educator-centred activities. If used frequently, without other more interactive methods, learners may develop a passive approach to their learning.

Complementary methods: Presentations; Guided Questioning; Field Work; Action Research and Community Problem-Solving.

guided questioning

By this we mean … using probing and often quite structured questions, for example during field work or on an interpretive walk, to direct learners' thinking about particular aspects of their experience.

Typical examples … A conservation education officer in a nature reserve takes a group of learners on a guided walk through an indigenous forest. She asks specific questions to guide the learners' thinking and to support them to think more about certain things, about which the officer has interesting and relevant information available. She asks questions like: "Can you notice something different about this tree compared to the one we sat under earlier?" and "Why do you think the bark is thin and flaky like this?" If the learners struggle with the question, she might give a clue by asking another question: "Which bark do you think will burn quicker and get a fire to pass through the area quickly – this kind of thin, flaky bark or thick bark?"

Underlying ideas … Constructivist theories of learning have had a significant influence on environmental education, and emphasised the way people think and make meaning of what they see. They suggest that learners make sense of their experiences and actively 'construct' meaning by consolidating past experiences, with the information they can access, and the context in which they find themselves. Active learning requires learners to think for themselves and to make connections between what they already know, and what they are presently experiencing and interpreting. Guided questioning is a way of encouraging learners towards making these connections.

Possibilities:

- Learners feel increasingly involved in the process and can develop their confidence and motivation to learn when they are given the chance to think things through for themselves and suggest answers. This can create a stimulating and more interactive learning experience.
- Guided questioning can add to the sense of fun and active enquiry, especially with groups of younger learners who enjoy the challenge of trying to give good answers in a spontaneous, collective way.

Pitfalls:

- Asked in the wrong way, questions can make participants feel as if they are being examined.
- If the educator's choice of questions steers the conversations and directs the learners' attention very selectively, he may become too dominant. This does not create much opportunity for learners to pursue their own learning interests. Be sensitive to the group's interests, pick up cues regarding who is interested in what, and encourage participants to ask their own questions as well.
- Assuming that learners have enough prior knowledge and experience to draw on in order to answer the questions. If learners are in a completely new environment (e.g. they are visiting a nature reserve for the first time) or they have limited knowledge to draw on, they may be less able to make the necessary connections, and another method should be chosen.

Complementary methods: Fieldwork; Interpretive trails; Presentations and talks; Values clarification; Demonstrations and experiments.

field trips, excursions & exchange visits

By this we mean … an extended trip and a visit to one or more sites of interest, for educational purposes.

Typical examples … Students tour the site of a new industrial development where they hear from various experts about the potential and actual social, economic and ecological impacts of the development. … A group of wine farmers visit a cellar where organic wine is produced. …Interpretation officers from the Namaqualand National Park visit the Table Mountain National Park to see, among other things, how the visitor centre operates.

Underlying ideas … There is value in *broadening learners' perspectives*, by exposing them to how others (particularly those with somewhat similar challenges, and with whom they can identify) approach things in a slightly different context. The way in which study tours and exchange visits are commonly used for learning among conservationists, farmers and other professional groups, brings to mind the socio-cultural perspective of '*communities of practice'*: members of a professional or working community (e.g. wine producers; or Namaqua National Park staff) learn from other members in this or similar, overlapping communities (organic wine producers, or TMNP staff). The concept of 'communities of practice' reflects what its originators, Lave and Wenger, call *situated learning*. Consider a new conservation officer. She joins her colleagues on a tour to another reserve, where ideas, experiences and practical tips are exchanged. Next year, if she receives visiting colleagues at her reserve, she will have her own experiences to share, and views which she has developed as part of the conversations in the community and context in which she works. Here learning is seen not so much as the acquisition of knowledge by individuals, but rather as a *process of social participation*. The nature of the context or *situation* (working in a nature reserve) impacts significantly on the process of learning – hence, *situated* learning. Similarly, the relationships between people are a critical factor: learning is in the conditions that bring people together (such as the camaraderie and confidence that develops on an exchange visit).

Possibilities:

- Encouraging learners to see things differently, think outside existing frameworks.
- 'On-the-job' training in fields where basic qualifications do not adequately prepare practitioners for the challenges of a particular workplace (e.g. conservation officers who have a basic background in ecology and sociology but limited understanding of the issues in the area where they come to work).

Pitfalls:

- Assuming that participants will know what to look for; prepare some focussing frameworks e.g. in a worksheet, or guidelines for reports or case studies that must be written before or during the trip.
- Assuming that participants will ask for and get all the relevant information; plan opportunities for available information to be accessed, for example, presentations at the site being visited, or written information to read.
- Not enough time to reflect on learning; schedule regular group discussions and/or individual reflections during the trip.

Complementary methods: Case studies; Presentations and talks; Demonstrations and experiments; Social Learning Deliberations.

games and quizzes

By this we mean … encountering and testing knowledge in a playful but structured way, often involving formal or informal competition between teams or individuals, to liven up proceedings and stimulate learners' motivation to learn.

Typical examples … The Enviro Picture-Building Game requires learners to interpret picture cards and match them to the clues read aloud by a facilitator. Each picture card is referenced to a separate Enviro Fact Sheet, which provides learners with new knowledge as they play the game. … WESSA holds an annual Enviro Schools Quiz in which high school teams compete in categories such as bird identification, indigenous environmental knowledge, sounds of the bush, environmental terminology etc. Teams prepare long before the event to brush up on their environmental knowledge, and prizes (usually books such as nature field guides) are awarded to the winning teams.

Underlying ideas … The environmental education community has historically been strongly influenced by the desire to provide alternatives to traditional 'talk and chalk' schooling methodologies, which prevailed in South African schools throughout the previous century. The popularity of games and quizzes is thus partly informed by the idea that learning is best supported when it is fun and interactive with high levels of participation. Games and quizzes can provide learners with the vocabulary and the thinking tools needed to engage with real-life environmental and sustainability issues.

Possibilities:

- High levels of excitement and sometimes even status are associated with competitive events such as quizzes. This can be used to stimulate interest in and commitment to environmental concerns, especially in schools or clubs.
- While many games and quizzes are thought of as being highly competitive and centred around individual performance, possibilities exist for educators to develop new games and quizzes that place more emphasis on collaborative learning, participation, creativity or open-ended problem-solving.

Pitfalls:

- Competitions may involve the rote learning of dis-embedded facts which some participants may commit to short-term memory without giving these facts much meaning outside of the context of the competition.
- Skilful mediation is required to downplay excessive competitiveness, encourage fun-filled competitiveness, and foreground the knowledge and skills that are to be gained.
- Participants can feel disheartened if they regularly lose games or fail to answer questions correctly in front of others. Try to ensure that games and quizzes end on a positive note, with all learners feeling that they have achieved something.
- Sometimes, answers are contested, with both players or teams convinced that *their* knowledge is correct. The facilitator must be knowledgeable, and/or have access to trustworthy information to settle disputes.

For more: The Enviro Picture-Building Game, Enviro-Facts and Eco-Footprinting Game are available through the Share-Net (WESSA) in Howick.

Contact your local WESSA branch to find out if the Enviro Schools Quiz or something similar is offered in your area.

Complementary methods: Project work; Presentations; Demonstrations; Case Studies.

EXPERIENTIAL METHODS

interpretive trails

By this we mean … a guided walk, or a trail with interpretive signage, through an area where much can be learnt about the environment, either natural or built. There are different ways in which the interpretation can take place, e.g. through signs, poster boards or plaques along the way, a booklet with a map and additional information, or a knowledgeable guide.

Typical examples … Many nature reserves and botanical gardens, for example, lay out walks through interesting sections of the area, that illustrate different ecosystems, a variety of trees, archaeological sites, places of cultural interest, and so on. Some offer guided trails with a field ranger or interpretation officer. The guide 'interprets' the walk for the visitors by pointing out interesting features and providing information along the way.

Underlying ideas … People learn from exposure to things, and from first-hand experience. People learn even better if they are given some information about what they can see, touch and feel. Some nature trails are open-ended and there is no interpretation other than directions. With the latter kind of trail, the assumption is that people will benefit purely from the experience (what they see and feel on the walk). These ideas have been very dominant in environmental education, and historically, nature trails and later urban trails, too, have played a strong role in many centre or protected area-based programmes. A popular development has been the use of guides with local or indigenous knowledge of the place, its history or its features. The assumption then is that learners can also benefit from local and indigenous knowledge – not only from the more formal, traditional sciences.

Possibilities: Interpretation can …
- focus learners and open their eyes to things they might otherwise have missed;
- provide information on things that are not necessarily evident (for example, explain that a particular plant has been used as medicine);
- provide lenses or a framework for looking, that learners can also use elsewhere.

Pitfalls:
- Interpretative resources are often static, e.g. signage, a single booklet, a guide with a pre-prepared presentation. This information might not meet the needs or interests of a particular learner or group of learners. It is particularly difficult to meet all needs with a group of learners with diverse interests or abilities. This limitation can be addressed through a more flexible approach (e.g. for the interpreter to be knowledgeable in various areas, and responsive to differing interests among his learners, and/or have different booklets for the same trail, some focussing on plant use, some on archaeology etc.) and/or to find out the learners' interests beforehand.
- Interpretation can detract from an experience. For example, if people simply want to relax and restore their spirit in a beautiful place, a guide's talking might interfere.

For More:
Roff, J. (ed.) 2005*. Bridging the Gap: A Handbook for Environmental Educators and Interpreters.* Share-Net, Howick.
Roff, J. 1995. *Making Meaning: Trail Tips for Environmental Educators.* Share-Net, Howick.

Complementary methods: Guided Questioning; Solitaire; Field Trips.

solitaire

By this we mean … An opportunity for participants to sit quietly, on their own, to experience nature around them, and to reflect in solitude on their experience.

Typical examples … Educators who take groups of children, business executives, township youth and others for a hike or other activities in a nature reserve often ask participants, usually near the end of the activities, to sit alone and in complete silence, perhaps close their eyes, listen to the sounds around them, and simply sink into the experience. They may also be given an opportunity to write down any reflections, perhaps a poem. Sometimes participants are encouraged to collect materials on the way back to make a personal or collective art piece.

Underlying ideas … Solitaire has been a popular part of nature-based experiential learning programmes with a strong values orientation. The underlying ideas include that people need opportunities to experience nature without influence from others, and opportunities to reflect on what they had learnt and experienced earlier. People also benefit from distancing themselves from the pace and distractions of urban life and taking 'time out' to reflect. Solitaire is an opportunity to reflect on values and commitments they might want to make for living differently when they return home. Writing down reflections might elicit clarification of own values and statements of commitment. Making art with nature, and others, is a celebration of a good experience and a way to remember, or be reminded of, the experience and what it meant.

Possibilities:

- Comparison between this experience and everyday life – reflection on everyday life and aspects such as over-consumption;
- Clarification of personal values and reflection on societal values (for example, the pace of life, assumptions that consumption of goods bring happiness – when simple experiences may do so even better!);
- Rounding off a learning programme, particularly if participants have a chance to share some thoughts after solitaire;
- Evaluation – educators often collect poems and other reflections and use these to reflect on the impact a programme may have had on participants; these can also be used to complement quantitative data in reports to managers.

Pitfalls:

- The assumption that people will be able to act on their feelings once they return home; even if they do want to, they may need much practical guidance.
- The assumption that nature speaks to us in silence … It often does so through others' voices in our heads, e.g. an inspiring author, or our own voice telling us what we think the trail leader wants us to write.
- Children and adults may need reassurance about risks in unfamiliar places (such as snakes) and what to do if they are encountered.
- While older participants may need quite some time to let go of the busy thoughts in their head, and therefore a longer solitaire period, be mindful that very young children cannot tolerate even short periods on their own.
- Ask permission before using written material elsewhere.

For more:

Vick, R. (ed.). 1991. *A Quiet Time…Creative Solitaire Writing*. Share-Net: Howick

Complementary methods: Music, Poetry and Visual Art; Interpretative Trail.

music, poetry and visual art

By this we mean … opportunities for people (children and adults) to give creative expression to their ideas and to reflect their experiences and feelings about environmental matters in open-ended and creative ways.

Typical examples … At the end of a two-day camp or retreat in a nature reserve, participants are asked to write a poem in honour of a special place that they visited or a special creature that they observed. … Children visiting a beach make sculptures in the sand that represent their ideal home. … Teenagers convey their ideas about pollution or animals through animated songs such as rap, traditional praise poetry or protest poetry.

Underlying ideas … People learn differently i.e. they have different styles of learning. There are different ways of accessing and expressing knowledge, and creative forms such as poetry, art and music are some of these. Not everything can be expressed through the same medium; certain experiences, especially more spiritual, intuitive and open-ended experiences, as well as values, are often best expressed through music, art or poetry. Art can provide a better outlet for some people's ideas and experiences than more formal types of expression. These ideas came to be especially dominant in the liberal tradition in education in which individual self-expression was emphasised. The use of creative art expression was also prominent in the values-education and experiential approaches to environmental education that were popular throughout the 1970s and into the 1980s, and which inspired many of the art activities which are still part of many centre- and school-based environmental education programmes today.

Possibilities:

- The National Curriculum Statement for Grade 8 (Arts & Culture) requires learners to "Use the Arts to demonstrate an awareness of environmental concerns".
- After producing poetry, music or pieces of art, people usually have a sense of pride and achievement which they are motivated to share with others. Group members who do not do well in formal, logical and abstract activities often shine in creative activities and may come to be recognised by the rest of the group for what they have to offer, in other respects as well.
- Many art forms are not language-based so they have much potential in contexts where language might be a barrier to learning.
- Music can help bridge barriers between very different people and hence facilitate social learning deliberations.

Pitfalls:

- Some people are not comfortable sharing their creative writing or other forms of personal expression with strangers, especially in situations where they feel that their private ideas might not be respected.
- It is important for participants to see the relevance of the creative work. Many people are strongly influenced by the view that art, poetry and music are not 'real' work and are thus of secondary importance. Unless the intentions and relevance of the process are made clear, some participants might feel they are wasting time.

For more:

Wright, T. and Roff, J. 1995. *Remnants*. Share-Net, Howick.
Roff, John. (ed.). 2001. *A Sense of Wonderful: Nature Poetry to Inspire a Sense of Wonder and Encourage Creativity*. Share-Net: Howick.

Complementary methods: Story Telling; Drama; Roleplay; Social Learning Methods.

role-play

By this we mean … Participants taking on different identities (roles) and acting these out with or for others, in a scenario depicting some sustainability issue or event, so that both participants and spectators can empathise (put themselves in the shoes of) others, and understand their experiences and contexts, or issue, better.

Typical examples … In a project in Namibia to resolve conflicts between field rangers and communal farmers neighbouring a nature reserve, both rangers and farmers are given the identities of various role players including animals, and a specific scenario to act out. With their amazing ability to mimic others, some participants soon have everyone rolling around with laughter, which helps the group deal with the difficult issues around access, trespassing, problem animals and trapping which they have to work through, and which are all raised in the role play. … Primary school learners visiting a National Park, each receive a different animal mask during a break at the camp, with the instruction: "It is sunset and you must find a safe, sheltered place to sleep. Think carefully about the animal that you are (e.g. a warthog, a fish eagle, a cheetah) and act out how you will look for a sleeping place. How will you move? Where will you choose to sleep? Who do you watch out for?" Learners are thus motivated to be attentive when they observe or read about animals, and to think about animals' habitats and needs.

Underlying ideas … In role play, participants can put themselves in the shoes of others and see what they must confront. They can also express their own ideas and their views of others, or situations, often more freely than if they had to stand up and make a speech. This can help to raise important but threatening points people might otherwise be reluctant to mention. Power relations can be reversed, during role plays. (See also Drama and Theatre for Development.) Role play as a method creates opportunities for participants to ''act out' or 'practise' real-life experiences in a focussed and safe learning environment. Constructivist theories of learning emphasise the importance of *scaffolding* (i.e. putting support structures in place for learners to access and then build on new ideas) and *modelling* (i.e. providing examples to guide learners).

Possibilities:

- When these simulation activities are used to explore conflicting interests, they can be used as the basis for deliberative negotiations towards possible solutions.
- The National Curriculum Statement for Grade 8 (Arts & Culture) requires learners to "Research human rights and environmental issues and interpret these in small group role-plays".

Pitfalls:

- Learners, young and old alike, may get so caught up in the performance (costumes, accents) that they lose focus on the ideas behind the role play.
- Some groups may feel self-conscious when asked to act in front of an audience.
- Effective role-play requires empathy and insights into someone else's situation. This can be difficult to achieve if participants have limited life experience or limited access to information about the situation they need to role-play.

For more: Berold, R., Burt, J. and Carklin, M. 2000. *Interactive Drama for Environmental Educators.* Share-Net, Howick.

Complementary methods: Storytelling; Participatory Methods; Social Learning Methods; Dialogic Methods; Scenario Planning and Backward Mapping.

values clarification

By this we mean … creating situations in which participants are challenged to think deeply about the values they hold, and how they relate to their actions and choices.

Typical examples … After a wilderness hike, the education officer asks participants to write about what they value most about nature and what they will do differently back at home. … A teacher asks children to design a T-short or a crest to show what they most value in life. … A trainer provides a group with photos of a fish, insects, a leopard, a dog, a child, etc. Each group member is given the task: Rank these photographs in the order of importance to you. Say you have to rescue them from a burning building or sinking ship – Who or what would you rescue first and last?

Underlying ideas … The values that people hold (i.e. the things that they uphold as being most important in their lives) influence the ethical actions that they take. Therefore, recognising the values we hold and understanding their influence on how we perceive environment and sustainability issues is an important starting point in deliberative learning processes, in which we might look for common ground between parties in an environmental dispute, or try to match our actions better to what we value. In the 1970s and 1980s, values education was a prominent concern in environmental education programmes. Caduto outlined a progression in values education activities from simply identifying what we value, to clarifying our values, to analysing them, and eventually opening them up for deliberation and possible change. Theories of stage-based moral development such as those proposed by Kohlberg, also informed values-based environmental education.

Possibilities:

- We often do things because that is how we were taught, or haven't been exposed to alternatives. Exploring values held by other cultures or communities (e.g. some eat dogs, some eat pigs, some eat no meat) and then considering them in the light of one's own values, can create transformative learning opportunities.
- Open-ended processes in which people are challenged to identify, analyse or even defend their values can be a turning point for many people in terms of how they view themselves in their community and wider environment.

Pitfalls:

- Where power relations don't allow learners enough opportunity to put forward their own ideas, learners might feel pressurised to 'adopt' the values that they see the educator is pushing forward. Where learners are assessed, they might feel even more under pressure to align their responses with those of their assessor!
- It is easy to assume that lack of environmental action means that participants lack the necessary values. Sometimes people's situations don't allow them to act in line with the values they hold. For example, someone may appreciate a litter-free environment but, in the absence of waste management services in an informal settlement, have limited options to dispose of their waste.

For more:

Jickling, Lotz-Sisitka, O'Donoghue & Oguibwe. 2005. *Environmental Education, Ethics & Action: A workbook to get started.* Nairobi: UNEP.

Frank Opie wrote a series of 'outdoor classroom' books in the 1980s which incorporated many values clarification activities.

Complementary methods: Dialogic methods; Guided questioning; Solitaire; Music, poetry and visual art; Scenario planning and backward mapping.

working with camera

By this we mean … using photography as a method of environmental investigation and interpretation, or as a method of representing personal encounters in environment through the medium of photographs.

Typical examples … Learners are tasked to take photos in a specific environment (such as their township, a local development, botanical garden). The photos are later discussed in terms of why individuals photographed what they did, how they felt about what they photographed, what they would like to change in the photos, how that could be done. … Rural people take photos of their daily lives and the natural resources they use. With the visiting educator, the photos are discussed as the starting point for weaving a story about natural resource use. The photos and story are later shared with other communities to stimulate discussion about community-based natural resource management (CBNRM). … Farmers take photos of seasonal wetlands, alien infested and cleared areas, harvested and unharvested stands of proteas, and so on, for comparative purposes and to observe landscape changes over time.

Underlying ideas … Socio-constructivist theories explain that our understandings of various contexts and our perceptions of places and events are socially constructed. People will choose to represent their sense of place through (i) what they choose to photograph (ii) the way they compose the photograph and (iii) what they *don't* photograph. … Discussing these choices can help us think more deeply about the way we relate to our environment, and how certain views we subconsciously hold may prevent us from effecting changes in these environments. Photos are somewhat more concrete than abstract discussions in that they recall actual places, which may provide a concrete basis from which to explore people's relationship to their environment, and help them understand it better. Photos can also provide an objective basis from which to make comparisons and inform land-use and development decisions.

Possibilities:

- Photographs are not language-based and can thus be used as starting points across multi-lingual groups with varying levels of functional literacy.
- Photographs can also be used as the basis for language learning activities, .e.g. comprehensions, story writing.
- Young and old enjoy choosing their own photographs and explaining their choices. For many, it is also empowering to learn to use a camera, or to have own ideas and representations of environment respected when each photograph is discussed.

Pitfalls:

- Portraying a particular, chosen perspective with a camera, requires technical skill.
- Although photographs are suitable for learners with low levels of functional literacy, interpreting photos does depend on fairly well-developed levels of *visual literacy* i.e. learners being able to interpret a picture in terms of content and composition.
- Whilst the act of taking the photographs requires no language skills, interpreting them later with others, does. Learners might need support to develop the skills, concepts and vocabulary needed to interpret the photographs.
- Photography requires access to cameras and facilities to print the photographs.

For more: Du Toit, D. & Sguazzin, T. 1999. *Camera & Context*. Learning for Sustainability Project / Department Education, Pretoria.

Complementary methods: Art; Field trips; Participatory methods; Story methods; Dialogic methods; Collaborative research.

INVESTIGATIVE METHODS

participatory methods

By this we mean … a variety of participatory learning activities (PLA) including participatory rural appraisals (PRA) and rapid rural appraisals (RRA) which are used particularly among people with limited literacy levels and schooling, to help researchers understand their resource use patterns, or to establish their development needs.

Typical examples … PRA and RRA are often used to prioritise from among a variety of community needs, and plan a project to address these needs, e.g. a clinic, a tourist lodge or fencing against animals which ruin crops. The locals may join scientists in a transect work to survey the land, or use small stones as tokens in ranking exercises in which they prioritise their needs.

Underlying ideas … All learning is 'participatory', as it requires the learner to be involved in the educational process. The term participation is used in a particular way here, however, to refer to the active, educative involvement in development and research processes, of people who have previously been disregarded in the planning of processes meant to benefit them. These methods have roots in diverse contexts. Among them are: rural development in the South, informed by critical theories and the liberation pedagogy of Paolo Freire, and later, the writing of authors like Petty and Chambers in the field of communal natural resource management. Also influential has been the idea of people-centred development (from former World Bank advisor David Korten and proponents in the Eastern Cape), which emphasises the need for poor people themselves (rather than donors) to clarify their needs. In the process, people learn more about their own contexts, and within the community those who seldom have a say (e.g. widows) may also get an opportunity to voice their views.

Possibilities:

- The idea has been extended to involving learners in the planning of the curricula of particularly adult learning programmes. In southern African environmental education courses, the trend has been to provide learners with a general curriculum framework structured by the course coordinators, but various opportunities to choose content and assignment areas which address the interests or needs of particular learners.

Pitfalls:

- Assuming that a 'community' is a group of similar people who agree about everything, when there may in fact be conflicting interests among them.
- Pseudo-participation – sometimes people are convened for a consultation, with little of the necessary background to enable them to participate meaningfully, and/or little intention to act on the outcomes of the participation, other than to see the developers' original intention through.
- Assuming that learners can and want to take equal responsibility for the curriculum of a learning programme. Learners may not be in as good a position to say what they don't know, and should know, as a course convenor.

For more:

Price, L. 2006. Joking around in Zimbabwe: Undoing and redoing participation. *Southern African Journal of Environmental Education*. (23). pp. 156-161.

Complementary methods: Action research and community problem-solving; Drama and theatre for development; Camera work.

field work and collaborative research

By this we mean … Investigations in the 'field', using tools from the social or natural sciences. Fieldwork may be specifically for learning purposes and practising enquiry, rather than finding out something new. Research is about generating new knowledge.

Typical examples … A door-to-door survey in a township, to find out about living conditions, using an interview schedule. … Audits to compare the diversity of plant species in two plots, using plant identification sheets. … Observations of different river health indices along a river, using a river health observation sheet and water quality test kits. … The farming community and Namaqua National Park staff embarked on joint research into new ways of protecting sheep from predation by caracal, using Anatolian sheep dogs. … In Kwazulu-Natal, farmers and forestry workers join the Mondi Wetlands Project trainers in delineating wetlands, that is, fieldwork to determine the boundaries of the wetland, as the basis for discussing where fields and plantations can be established. … Canadian communities enlisted the help of environmental agencies to help them research the links between industrial pollution and cancer among their children, when other scientists disputed that such a link existed.

Underlying ideas … Field work is valuable because we learn about the area and the issue that we study, and develop science skills and principles (such as accuracy and rigour). In formal education settings, field work has a long history, particularly in association with geography and environmental education, where it has been valued as a form of active and experiential learning involving 'hands-on' activities, and developing practical enquiry skills as well as conceptual understanding and broader insight. In collaborative research, scientists share the tools of science, allowing others to find out about local places and issues which concern them, but also how to use scientific tools, and to develop an understanding of how scientific knowledge is formulated. If farming communities joined scientists in research about biodiversity loss, for example, they may be more likely to learn from the findings, and act on them. Joint research is a progression from older top-down, one-way extension methods in which extensionists passed on others' research findings.

Possibilities:

- Involving school learners in monitoring environmental change, e.g. in the limbovane project which collects data on the biodiversity patterns among ants.
- Involve learners as well as experts in identifying research questions. Complement field work with information that is already available.

Pitfalls:

- Acting on findings before one is sure of their accuracy.
- Learners usually need much time and guidance to practise with scientific tools.
- Give attention to asking the right questions, or the data might be useless. Interview questions must be piloted before we go out into the field with them.
- Learning is not complete without attention to analysing the data and reflecting on what it means (meaning-making and consolidation).

For more:
The Hands-On Series (e.g. Hands-On: Stream and Pond Life, Life around a Waterhole, Grassland Life, Fynbos Life). Available from Share-Net, Howick.

Complementary methods: Presentations; Action research and community problem-solving; Stewardship agreements.

exploring indigenous ways of knowing

By this we mean … investigating traditional practices and local or indigenous knowledge to explore options for more sustainable lifestyle choices.

Typical examples … Learners interview elders about how daily practices (such as making bread, or breakfast) are done nowadays compared to in previous generations. Then they study the environmental impacts and risks of traditional ways, and modern ways. … An environmental educator researched what knowledge about vegetable production still existed in his declining community, as the basis for starting new food gardens and working towards greater sustainability and pride.

Underlying ideas … In recent years the conservation, development and educational fields have seen a burgeoning interest in indigenous knowledge systems (IKS). In the natural sciences, there has been much emphasis on collecting indigenous knowledge about nature and natural resources. In environmental education, different educational ways of engaging with IKS have also been explored. One approach is to analyse traditional understandings and practices alongside contemporary understandings and practices to understand why things have changed over the years, what has been lost and gained in the process and the implications for sustainability. Learning is effective when it is situated in time and place and hence has more meaning for learners. Reflecting on (or even just trying to investigate) indigenous ways of knowing enables learners to situate their learning within their cultural context and draw on their prior knowledge and experiences.

Possibilities:

- The Pietermaritzburg Museum's environmental club investigated what isiZulu proverbs existed in their community about birds, and analysed what these tell them about the ways in which people traditionally knew and valued birds.
- The National Curriculum Statements for the Sciences, Technology and Tourism encourage the exploration of connections between traditional practices, cultural heritage and environmental sustainability.

Pitfalls:

- Setting up indigenous/traditional knowledge against modern, scientific knowledge as if they are conflicting opposites. The boundaries between them are in fact blurred and it is more useful to reflect on what each tells us about sustainability.
- There are many regional and cultural variations of indigenous knowledge, names and stories, which may lead to disagreement among learners. Rather than see this as a problem, use the opportunity to open up further deliberation about why such variations exist, what their implications are for contemporary perspectives etc.

For more:

Kota, L. (ed.). 1999. *Soil conservation through indigenous knowledge practices in Swaziland.* Share-Net, Howick.
Indigenous Knowledge Series: Trees, Goats and Spirits (Umlahlankosi); Beer, Ants and Ancestors (Umqombothi); Sweet Water (Amanzi Amnandi) and Grain Storage: Isangcobe. Share-Net, Howick.
Matowanyika, J.Z.Z. (ed.). 2000. *Indigenous knowledge systems in environmental education within communities in southern Africa: A Handbook*. SADC Regional EE Progamme, Howick.

Complementary methods: Projects and practical action; Action research and community problem-solving; Demonstrations and experiments.

case studies

By this we mean … providing learners with in-depth information (with varying amounts of detail and formality) about a particular issue in a particular context. Learners have to analyse, or are provided with an analysis of 'the case', in order to develop an in-depth understanding of that case, often as the basis from which to reflect on their own situation.

Typical examples … A workshop facilitator shows a ten-minute video-clip about an environmental NGO in Brazil that tackled air pollution in that country. After the video, this case is discussed using a set of structured questions the facilitator developed, thus developing a case study. The group considers what lessons they can learn from the Brazilian example. … In the Cape Flats Nature programme, staff and volunteers get together on a monthly basis to discuss their work relating to managing nature reserves between sprawling informal settlements. Each month one group member must present a case study of a work-related issue they have encountered, as the basis for discussion with colleagues.

Underlying ideas … Case studies often provide the next best alternative to actually going out and having a first-hand encounter of an event or context. Much can be learned from others and case stories are a way of accessing what others have done or learned. Case stories are a way of making connections between one's prior knowledge and the knowledge of others, thereby gaining new insights. The reality of one's experience can be verified through 'cross referencing' with the experiences of others. It is not possible to take learners around the world to learn from different examples, but a selection of case studies can provide a concise and affordable tool for learning from others' experiences.

Possibilities:

- Deepening information given during a presentation, or forming the basis for a presentation.
- Case studies can share what other people have done through environmental projects, how they have coped with certain living conditions, their responses to environmental risks, the way they have used certain resources.
- Some case studies are selected for their similarity to the context and orientation of the learners so that they can consolidate their ideas and develop them further. However, case studies can also be used to introduce completely new ideas and expose learners to perspectives which challenge preconceived ideas.

Pitfalls:

- When brief, case studies can run the risk of over-simplifying a situation for the sake of capturing it on a few pages or in a video. Complexities and nuances might be lost.
- Case studies are invariably developed for a particular purpose, and they may therefore present a limited or one-dimensional view. It might be necessary to create opportunities for the learners to engage critically with the case studies, especially those that have been compiled for purposes of promoting an organisation or product.

For more:

NEEP-GET. 2005. *Stories of Change 1: Action Research Case Studies.* Share-Net, Howick.

Le Roux, Cheryl (ed.). 2005. *Our Environment, Our Stories: A Collection of Case Stories of Environmental Education Research in Southern Africa.* Unisa, Pretoria.

Complementary methods: Field trips, excursions and exchange visits; Presentations and talks; Story Methods; Dialogic Methods.

LEARNING BY DOING

projects and practical actions

By this we mean … Local actions to address an environmental issue or a practical development or conservation need. Educators can set up projects and/or use practical actions as an educational opportunity.

Typical examples … In Eco-Schools the school community gets involved in practical action projects to improve environmental conditions at their school, e.g. they plant a food garden, or start recycling their waste. NGOs and government agencies join with communities in practical environmental projects such as wetland rehabilitation, donga reclamation or tree planting. Children in a cholera stricken area make hand washing devices from recycled materials, to hang up outside the toilets, and learn that washing hands stops the disease from spreading.

Underlying ideas … Eco-Schools teachers can draw on the practical school improvement projects to teach classroom lessons, but children (and adults) also learn from the actual doing: what it means and what it takes to grow your own food, or to recycle your waste. A sense of citizenship and agency may be among the things learnt. Sustainability is often a matter of a practical local concern which needs to be addressed with urgency. By tackling such issues through practical action, much is learnt by the doers, not only the practical know-how (how to grow vegetables), but also the underlying knowledge (what vegetables require to grow, and what nutrients they provide), as well as a sense of agency (we can feed ourselves even if we are unemployed). Educational theories relate to experiential learning, the value of hands-on activities, but also critical education (sense of agency and responsibility) and social learning theories e.g. community of practice – a group of women working with an extension officer to become self-sustainable in their food gardens form a community of practice which can soon teach newcomers or other community groups.

Possibilities:

- Food gardens and other practical projects can be used as the basis for curriculum learning in relation to social sciences, economics, natural sciences, technology, life skills, languages, arts and more.

Pitfalls:

- People are often so busy with the practical action that they do not reflect on what they are learning.
- Projects can be hamstrung by many problems, big and small, particularly when they attract big funding; these problems can be learningful but only up to a point!

For more:

Chadwick, A. (ed.). 1994. *Health Gardening: A Guide to Growing Food for Life.* Share-Net, Howick.

How To: Make a Trench Garden; Turn useless plastic into a useful bag; Make concrete and cement blocks; Build a VIP toilet; Make recycled paper; Build a chicken tractor; Make compost and liquid manure; Solar cooking. Share-Net, Howick.

Food & Trees for Africa. *My Nursery: How to Set Up and Run a Community Nursery.*

Complementary methods: Field trips, excursions and exchange visits; Demonstrations and experiments; Presentations; Collaborative learning.

action research & community problem-solving

By this we mean … addressing a local problem, usually as a group of interested or affected people, using an open-ended but structured action research process which maximises learning, and applies the learning back into the problem solving. This is similar to action taking, but the process is somewhat more structured and reflective, with regular periods of reflection and planning. A typical action research cycle has the following, repeated phases: *investigate* (a problem), *plan* (an action), *act*, *check* (the effects of the action), *reflect* (on the outcomes), then plan a follow-up action-reflection cycle, repeated as many times as is necessary or possible. This is also an investigative method, a participatory method, and learning by doing!

Typical examples … In GREEN (Global Rivers Environmental Education Network) North American communities investigated water pollution using scientific tests such pH, turbidity and E.coli levels. This became the basis of the Schools Water Action Project (SWAP) and Share-Net water quality testing kits used in South Africa. … In the 1980s and early 90s action research was popular with university-based educators wanting to encourage a sense of agency (empowerment) and critical, reflective learning among students and in-service teachers.

Underlying ideas … The method (or methodology, as it may involve a number of methods) has diverse roots. Kurt Lewin, who might be the first to have used the term, used action research processes in a business context and to address social issues such as those experienced by prostitutes. In contexts of political or economic oppression, AR&CPS has been taken up for its transformative potential, not only of practice, but of people's ideas about their practice. AR&CPS is often associated with a sense of empowerment, of sharing the tools of science to enable people to investigate their own situations and issues which may affect them, then decide on what actions to take to address these issues, take action, and learn from the results. This recognises that we don't necessarily get things right the first time. Key ideas, derived inter alia from critical theories, are that we learn from and *through* active participation, and that our daily work (practice) is improved by examining it critically and taking our own steps to improve it - an idea which can be described as praxis (reflection in-and-on action). There is also a strong assumption that investigating real issues which affect us directly, is a powerful educational experience, which can develop a collective and individual sense of agency.

Possibilities:

- In the USA inner city youth were involved in AR&CPS as a means of reviving and improving neighbourhoods.

Pitfalls:

- Involving learners in issues which are a concern to the educator, but not necessarily to the learners; learners may require a situating story to develop a sense of proximity to the issue; alternatively, reserve the method for issues that really concern the group.
- If AR&CPS is used for formal assessment in a schools' context, be clear on which aspects of the process will be assessed (include reflections), and manage the division of tasks among learners where necessary.
- AR&CPS and similar methods usually take much more time than one anticipates.

Complementary methods: Demonstrations and experiments; Field trips, excursions and exchange visits; Social learning methods.

stewardship agreements

By this we mean … agreements (both formal and informal) between landowners and conservation agencies, whereby privately owned land would be set aside, farmed or managed under a conservation ethic (stewardship), usually in partnerships between the landowners and conservation agencies. While this is not usually thought of as an educational method, it has considerable potential for learning, both by the landowners and the conservationists.

Typical examples … Conservation agencies have long been involved in helping farmers to set up conservancies, whereby the landowners agree to protect leopards or other threatened species on their farms (for example). More recently the bio-regional programme C.A.P.E. has set up landscape initiatives to protect pockets of threatened plant species from threats like agricultural expansion. For example, Cape Nature negotiates with farmers in the Cederberg Biodiversity Corridor that they will set aside part of their land for conservation purposes. In somewhat similar processes, National Park staff negotiate with land owners who are affected by proposed expansions of protected areas.

Underlying ideas … In the process of structuring the agreements, both farmers and extension workers (who broker the agreements) can learn much about sustainability and about the relationship between agriculture and conservation in a living, working landscape. These topics are relatively new to all concerned. Stewardship can be seen as a way of work, which involves *situated learning*, as well as *mutual learning* between conservation scientists on the one hand, and land managers on the other hand. By forming partnerships with farmers, extension officers move from an 'us and them', 'top-down' position, to become members of the farmers' *community of practice*. Similarly, farmers who join stewardship initiatives become part of the conservationists' community of practice. Within communities of practice there are established ways of sharing knowledge, e.g. visits to the farm, farmer association or conservancy meetings, inputs from extensionists at farmer days, but also new methods, such as using the Internet and forming multi-partner task teams.

Possibilities:

- Stewardship as a way of work can be applied in many contexts. In the Mondi Wetlands Project and the Sandveld Task team, for example, conservation staff work with sugar farmers and potato farmers respectively to draw up guidelines for 'best practices'. These guidelines come from the farmers' own practice but are revised through the lenses of 'sustainability' that the conservationists help them apply to their context and industry.

Pitfalls:

- Assuming that one has all the answers, and simply needs to manipulate a landowner to 'close a deal'.
- That there is a particular recipe and a quick formula for getting results; extensionists need general social skills to 'read' a situation, to build up relationships with partners and nurture them over considerable periods of time.
- Any action that would reflect a lack of sincerity, or break trust.

For more: Cape Nature's Conservation Stewardship Manual and CD.

Complementary methods: Experiments and demonstrations; action research and community problem-solving; participatory methods.

DELIBERATIVE METHODS

dialogic cartoons and programmes

By this we mean … methods which maximise deliberative dialogue among readers, viewers or audiences and resource people/experts, through cartoon texts (printed or electronic) or programmes which present dialogue, and which encourage further dialogue among participants (*dia* – is Latin for *through* and *logue* is *knowledge* or *word*).

Typical examples … South African writer and educator Peter Esterhuysen made use of a dialogic approach for the cartoons developed by the Storyteller Group (taken up by the *Soul City* magazines and TV shows like Soul City and Soul Buddies). These programmes dealt with issues South African adults and children face, like HIV/AIDS and other health issues, over-consumption or the generation gap. Different characters suggest different ways to deal with situations, and the end is left open.

Underlying ideas … The aim of deliberative dialogue is for learners to express their own views and values and then come to a new, improved and perhaps jointly held understanding of matters – an understanding which none of the participating parties may have held before. Esterhuysen drew on the dialogic theory of Bakhtin, who explained how people try out different 'voices' that they gain from others. To design the cartoons, the Storyteller Group held focus group discussions with young people typical of those for whom the programmes were intended. They then used the participants' words and images (discourse), to create the characters and dialogue for a cartoon on the same topic. In the cartoons, the characters (with whose 'voices' readers can then identify) leave some issues open-ended, i.e. ask readers to consider/deliberate (either on their own or in groups) a way forward to resolve a particular issue, and to consider the implications of various positions (values) and actions (or inactions).

Possibilities:
A similar approach is evident in educational talk shows (either on radio or TV): the host introduces a particular (usually contentious and current) topic, such as global warming or nuclear power, highlighting some of its attendant concerns. One or more experts (a panel) may present their (often divergent) views on the topic. Listeners or viewers then have a chance to give their perspective, for example through a phone-in. They respond to the experts and to other listeners or viewers. The host then manages a dialogue between the different parties, providing reflective summaries, and advancing the dialogue forward. The Ecological Youth for Angola use phone-in programmes for members of the public to deliberate concerns regarding their local environment.

Pitfalls:
The dialogic process may require careful mediating by a facilitator, so as to give divergent perspectives a chance, to challenge inappropriate comments, and to help the whole group to move forward. It is particularly difficult not to simply manipulate the group to adopt one's own perspective, on the one hand, or to allow the strongest (usually most established) of the voices in the dialogue to remain the loudest.

Complementary methods: Story methods; Case studies; Participatory methods; Values clarification.

social learning methods

By this we mean … learning by social aggregates, such as professional communities, organisations (a company, industry or government department) or networks like those supported by the SADC Regional Environmental Education Programme. According to Danny Wildermeersch (reference below) social learning is experiential learning in groups, communities, networks and social systems that operate in new, uncertain and unpredictable circumstances, and is directed to solving new and unexpected problems which have arisen in a particular context .

Typical examples … Conservationists and fruit farmers in the Western Cape get together to discuss the impact that the threat of global warming is likely to have on exports and the sustainability of the industry. Municipalities, NGOs and civil society groups get together to work out what to do about overstretched sewage facilities and resultant water pollution. Potato producers in the Sandveld, local conservationists and water researchers get together to draw up guidelines for best practices in this industry in this part of the world, following alarming drops in the water table.

Underlying ideas … While in previous decades theories about learning and change which informed environmental education have tended to focus on the individual's learning and individual behaviour and lifestyle changes, there is now increasing emphasis on social learning theories. These include the various socio-cultural theories of how we come to form our values, practices and understandings; the concept of situated learning in communities of practice; and actor-network theories. Sustainability requires us to create public and organisational spaces for learning and innovation, to utilise diversity and to overcome constraints like power imbalances preventing some from participating. It is the encounters between people which provide possibilities or opportunities for meaningful learning as they can lead to constructive dissonance (difference) and increase social cohesion. Social learning is a way of organising individuals, organisations, communities of learners and networks, in ways which mobilise a diversity of values and viewpoints, identify conflicts and differences, and facilitate a process of learning towards a new, shared perspective and way forward. Social learning methods draw on theories about dialogue (e.g. David Bohm). Key steps in transformative social learning include frame awareness (awareness of one's own or another's frame of reference), frame deconstruction and reframing, which are also informed by critical and post-structural theories.

Possibilities:

- Through facilitated social learning, knowledge, values and action competence can develop to increase a group's possibilities to participate more fully and effectively in the resolution of emerging sustainability issues.
- Social learning also encourages reflexivity, the ability to question and break away from existing routines, norms, values and interests, if necessary.

Pitfalls:

- Be mindful of possible discomfort and dissonance thresholds. There is no learning without some dissonance, but also no learning with too much dissonance.

For more: Wildermeersch, D. Social learning revisited: lessons learnt from North and South. In Wals, A. (2007). *Social Learning Towards a Sustainable World*. Wageningen University Press, The Netherlands.

Complementary methods: Action research and community problem-solving; Case studies; Scenario planning and backward mapping.

media analysis

By this we mean … Analysing media messages such as advertisements and other texts for their underlying values, and considering the implications of these values in relation to environment and sustainability concerns.

Typical examples … Learners 'unpack' or analyse an advertisement for a 4x4 vehicle driving through what the advertisement describes as a 'swamp'. Teacher asks them to consider the values reflected in the advertisement: How does this advert present the environment? How does it present people's relationship to the environment? What other words could be used for 'swamp'? What values would be evident if the term 'wetland' was used rather than 'swamp'? Now write your own advertisement that reflects values of care and responsibility towards the environment.

Underlying ideas … This method is underpinned by a concern that while exposure to the mass media (TV, magazines, advertising boards) far outweigh exposure to school curricula, most children (and many adults) are passive receivers and uncritical consumers of such media messages. Informed by an ethical and critical approach to education, the intention with this method is to conscientise learners, to become critically aware of the intentions behind media messages (such as profit-making), and to reflect on the implications of these messages for people and planet. The method is also informed by social constructionist theories which explain how individuals' lifestyle choices are often shaped by hidden factors – sometimes they are not really choices at all. Becoming conscious of the cultural factors which shape our behaviour encourages more conscious actions.

Possibilities:

- Values clarification
- Considering own lifestyle choices.

Pitfalls:

- The assumption that being aware (conscientised) would result in better lifestyle choices. As in behaviourist theories, awareness does not necessarily lead to immediate change. People may be so overwhelmed by the awareness of hitherto hidden forces impacting on their minds and lives that they develop action paralysis (unable to act). People need practical and positive possibilities – examples of how things can be done differently – a culture which shows that alternatives are indeed possible.
- People also learn from doing (for example, growing up in a home where alternative, non-consumptive values inform daily decisions as a simple way of life).

For more:

Jickling, Lotz-Sisitka, O'Donoghue & Oguibwe. 2005. *Environmental Education, Ethics & Action: A workbook to get started.* Nairobi: UNEP.
Website of Adbusters.

Complementary methods: Presentations and talks; Case studies; Story methods – writing new stories for re-imagining possibilities; Values clarification.

story methods

By this we mean … a variety of methods which use stories to achieve various educational outcomes.

Typical examples and underlying ideas … Story-telling is an ancient educational method. More recent is the Scottish story-line method, informed by constructivist theories of learning, where teacher starts a story and ask learners to finish it. In critical media education and ethics methods, learners must re-write a story, to reflect an alternative environmental ethic. This latter approach has developed in Canada.

Human beings, young and old, love stories! Stories grab the imagination and involve the listener (and the teller) in deep ways; the best stories, modern and old, tap into archetypal images which humans, across cultures, carry with them from birth. If a story is engaging, learners find themselves 'in it', experiencing what it is to be a certain character (the brave hunter, the hungry child). Most story-based methods are also used for deliberation. In the story-line method learners often work with others to decide how they want a story to end (e.g. We want the sea to be clean again), and this could be extended to deliberating what must be done to achieve the desired end (We must stop polluting the sea by …). When learners re-write stories to imagine alternatives (e.g. tell the story of Red Riding Hood from the wolf's perspective) they encounter the cultural values which shaped the original story, reflect on how such values play out in the way people relate to nature and each other today (wolves are persecuted; little girls are saved by men); and critically and creatively consider (deliberate) other ways. Socio-cultural and critical theories of knowledge and learning inform this latter approach.

Possibilities:

- Situating stories – telling or eliciting stories which allow learners to identify with an issue or concern; follow up with investigation of the issue or concern.
- Scan the magazines or TV for compelling local stories/cultural perspectives.
- Re-imagine culturally entrenched ways of relating to the environment and others (by re-writing stories which reflect exploitative values, or writing stories of what sustainability might be)
- Sensitisation – once learners have re-written or heard a well-known story from another perspective, they may hear other stories differently, too.
- Values clarification, deliberation, problem-solving and creativity.

Pitfalls:

- Telling stories only from your own viewpoint, and if only one end is possible.
- Assuming that all learners will be familiar with a certain story; while most classic stories exist across cultures. For example, character names may differ.

For more:

- Bjerg Hansen, K. & Sguazzin, T. 2000. *Sustainable Stories? Using the Scottish Storyline Approach for Environmental Learning in South African Schools.* Learning for Sustainability Project, Johannesburg & Department of Education, Pretoria.
- Jickling, B. et al. 2006. *Environmental education, ethics and action. A workbook to get started.* UNEP, Nairobi. www.earthprint.com or sharenet@wessa.co.za

Complementary methods: Investigative methods (investigate an issue after reading a situating story); Role-play (learners can act out their re-imagined stories); Case studies (study of real-life stories with more depth of factual information); scenario planning; media analysis.

drama and theatre for development

By this we mean …. learners developing and performing a dramatic play on an environmental issue, and possibly engaging the audience in considering solutions.

Typical examples …In theatre for development, a group of rural people would develop their own roles and script (story) for a play, with the help of a development worker or environmental activist, on a contentious local issue, for example a proposed dam which would flood their land. They would invite participation from other villagers to come up with a way forward to respond to the issue. Theatre for development works best if the audience can recognise themselves and the issue in the play. In a schools' context, learners may perform a play which reflects the learning they have done over a term, regarding a particular environment and development issue they have studied.

Underlying ideas … Theatre for development was introduced to South African environmental educators in the 1980s and 1990s, along with other participatory and critical methods of engaging people in empowering and transformative learning experiences. It draws on the *liberation pedagogy* of Paolo Freire and *critical theories* for adult education and development, more generally. It thus shares roots with *participatory* methods. It aims to give people who have few avenues to express their views, an opportunity to do so, and it encourages people to mobilise themselves, come to a greater understanding of their situation and some agreement about it, and take control of it. It therefore also shares ideas found in methods for *dialogic* and *social learning*. Using drama is however not necessarily informed by these ideas; in schools the underlying intentions with drama might simply be to provide learners with an exciting opportunity to research, reflect on, synthesise and present ideas regarding a particular issue. The production of a drama (the learners themselves participating in this phase) is then an opportunity for reflection on and responding to concerns in ways that are appropriate for school-based learners (acting to further mobilise attention).

Possibilities:

- The National Curriculum Statement for Grade 8 (Arts and Culture) requires learners to "Use the Arts to demonstrate an awareness of environmental concerns". Thus learners' collaboration on the writing, production and performance of an environmental drama can be an integral part of the Grade 8 curriculum.

Pitfalls:

- Assuming that acting out concerns will motivate or equip learners to take action to address them; this may require additional information and ongoing support.
- The public performance of a play requires a lot of work and some technical knowledge about stage play; learners and teachers can either neglect this aspect to the detriment of the eventual performance, or get so caught up in the production aspects that environmental learning is neglected.
- If the research and deliberation done beforehand is too limited, a play may be too superficial to meaningfully engage either the performers or the audience.

For more:

Berold, R., Burt, J. and Carklin, M. 2000. *Interactive Drama for Environmental Educators*. Share-Net: Howick.

Complementary methods: Case studies; Story methods; Presentations and talks; Participatory methods; Action research and community problem-solving.

scenario planning and backward mapping

By this we mean … *Scenario planning* is a structured process of thinking about and anticipating the unknown future, without pretence of being able to predict the future or influence the environment in a major way. Related to scenario planning, *backward mapping* begins by asking learners to envisage their desired future scenario. The group then works backwards from this desired endpoint to map out the key decisions or practices required to achieve this vision. The group ends with a clear plan of what needs to be done – starting today – to achieve the desired future.

Typical examples … This method originated in the business and industry sector although it is increasingly popular in environment and sustainability debates. In a workshop setting, a facilitator presents learners (e.g. high school learners, college students, members of a township-based environmental organisation) with a range of possible future scenarios. The various scenarios may be determined by economic shifts, political upheaval, a health crisis, a natural disaster such as floods or drought, drastic change in societal values due to international events etc, etc. Learners then contemplate each scenario, analysing how they might affect aspects of social, ecological, economic or political life, and how such situations might be responded to. Recently, the Millennium Ecosystem Assessment, a global assessment of the current and future state of the world's ecosystem services, has made scenario planning one of its working groups.

Underlying ideas … The complexity of the environment undermines our ability to understand what the future will look like. Traditional planning and forecasting practices on their own are not enough to serve our needs in getting the insights and answers to the future. Through deliberative processes such as those associated with scenario planning or backward mapping, learners are exposed to diverse perspectives, open-ended debates, creative visioning processes and constructive dissonance, thereby becoming better equipped to respond as effective citizens in an uncertain future.

Possibilities:

- Contemplating how best to respond to a range of possible futures (scenario planning) and working backwards from descriptions of an ideal future (backward mapping), can stimulate much debate and critical understanding of what 'sustainability' might *really* mean in their context.
- Futures scenario planning can be well-supported by computer-assisted modelling (projections). Computer software programmes are available that generate future scenarios based on existing data or other variables.

Pitfalls:

- Future scenarios are 'thinking tools', not realistic guarantees of what will happen or what must be done. It is important for the educator and the learners to keep this in perspective, especially when computer-assisted models might make the future possibilities look certain.
- Scenario planning and backward tracking presuppose a certain level of knowledge and analytical thinking skills on the part of the learners and the educator. Without adequate information and a clear understanding of the purpose of this method, learners can easily slip into a mode of unrealistic fantasising, proposing unachievable future goals or suggesting inappropriate responses.

Complementary methods: Social learning; Storytelling; Role play; Values clarification; Demonstrations and experiments; AR&CPS.

NOTES

NOTES

This booklet is about methods and processes to support change-oriented learning towards better environmental sustainability practices. It is produced by the Conservation Education Programme of C.A.P.E. (Cape Action for People and Environment), a multi-partner bio-regional initiative aimed at biodiversity conservation and benefits in South Africa's Cape Floristic Region. The C.A.P.E. Conservation Education Programme (CEP) is run by the Environmental Education and Sustainability Unit at Rhodes University in Grahamstown, and supported by the United Nations Development Programme (UNDP) and local partners.

This booklet has been produced for conservation education staff, teachers, trainers, extension workers and stewardship officers, development facilitators, researchers, and the many others who support environmental learning in a wide range of contexts.

The purpose of the booklet is:

- ✓ To help us broaden the range of methods we are comfortable to use.
- ✓ To encourage us to think more carefully about how we use methods, and about the assumptions we hold about learning and teaching.
- ✓ To enrich our methodological frameworks so we can use our methods with greater educational intent, towards stronger learning outcomes.

The booklet is an introductory text. It does not aim to be comprehensive, either in the selection of methods presented, or in the depth of discussion. The booklet can be used in conjunction with more comprehensive texts on educational theories, e.g. Module 3 of the Rhodes University/C.A.P.E./Gold Fields Certificate in Environmental Education, a professional development programme offered through the C.A.P.E. Conservation Education Programme.

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