A LEARNING STRATEGY FRAMEWORK

FOR NATURAL RESOURCE MANAGEMENT ORGANISATIONS

WRC Report No. TT 427/09
January 2010

ISBN 978-1-77005-909-2
Set No. 978-1-77005-910-8
Printed in the Republic of South Africa

This publication is aimed at senior management of organisations with responsibilities for management of natural resources. Its ultimate purpose is to prompt initiatives towards formal mainstreaming of the kind of learning culture necessary to address the challenging demands faced by such organisations.

These guidelines suggest a series of actions and concepts to consider that encourage staff to debate and negotiate the meaning of what organisational learning means in their context. The intention is that this ongoing process will institutionalise learning in a way that will improve effectiveness and efficiency of management of our precious natural resources.

The structure of the document is largely based on the process of adaptive management. However the proposed actions can easily be adapted to whatever the current organisational management approach is.

The contents of the document emanate from a project jointly funded by the Water Research Commission and Department of Water Affairs and Forestry the outcome of which is captured in the 2009 report "*Enabling effective learning in catchment management agencies: A Philosophy & Strategy*" by Roux DJ, Murray K, and van Wyk E.

Compiled by
Dirk J Roux[1], Kevin Murray[2] and Liesl Hill[3]

[1] Monash South Africa and International WaterCentre
[2] Insight Modelling Services
[3] Natural Resources and Environment, CSIR

LEARNING ORGANISATIONS

Based on Roux DJ, Murray K and van Wyk E (2008) Learning to learn for social-ecological resilience: Balancing strategy options in public sector organisations. In: M Burns & A Weaver (Eds.). *Exploring Sustainability Science: A South African Perspective*. Sun Press.

When change, uncertainty and surprise are common features of everyday life, our capacity to learn takes on special meaning and urgency. One needs to reflect on and extract lessons from past experiences, unlearn outdated habits, consider options for the most appropriate future direction, anticipate change, and strategically acquire new knowledge - all at the same time.

The degree to which organisational learning takes place is determined by the quantity, quality, focus and coherence of the learning that is practiced by its members. It would thus make sense for organisations to have strategies in place to understand the learning process in relation to their mandate and strategic objectives. It should also deliberately advance those conditions that enable good learning practices. However, such enabling conditions may vary widely and may be deeply contextual.

A learning organisation is one that is particularly skilled at acquiring knowledge (from external sources), creating knowledge (internally), and sharing knowledge (in the whole learning network), and, most importantly, at modifying its behaviour to reflect such new knowledge and insights. These skills reside in people. It is the availability of such special skills and attitudes that will ultimately determine the quality of the learning journey and the effectiveness of responses to external forces.

REALITY CHECK

Reacting to external forces first requires acknowledging their existence. The natural resource management environment is very demanding for many reasons:

The rate of knowledge production world-wide is ever-increasing. Many knowledge workers suffer from information overload. Knowledge mobility, both electronically and through people relocating, is increasingly easy. There is also acknowledgement of the increasing interdependence of those with knowledge and those who need to apply it (e.g. between scientists and policy makers).

Managing natural resources is about managing social-ecological systems, i.e. linked systems of people and nature. They are complex systems, inherently unpredictable on many levels. The strategic importance of common property resources, like water, also remains undervalued by many.

THE LEARNING STRATEGY IN CONTEXT

The following learning strategy framework aims to make organisational learning specific to each organisation. This framework is generic although specific organisations may vary in the way they apply it.

The actions in the strategy call for staff to reflect on, and debate, what learning and knowledge management means to them now and what it should mean in future. Importantly, it requires consideration of both the personal and organisational relevance of the variety of concepts proposed for discussion.

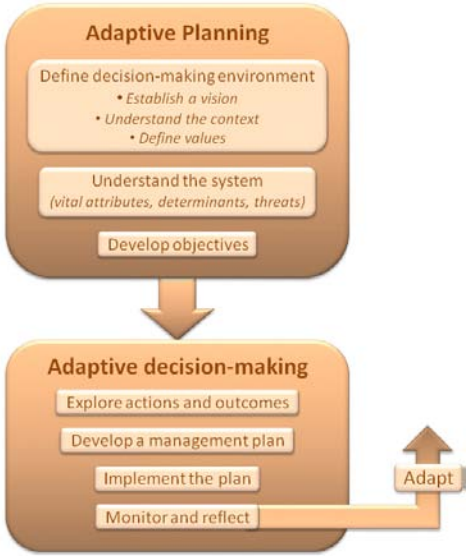
The outputs of this reflection and debate are entirely organisation-specific, i.e. deeply contextual. Outputs include the learning-related vision, the chosen operating principles, the understanding of the social-ecological system, the learning-related management objectives and associated goals, the management plan, and the way learning will be monitored, reflected upon and adapted to. It is not likely that two different natural resource management organisations will produce the same outputs.

ADAPTIVE MANAGEMENT

Adaptive management is an intuitively sensible framework within which learning can take place. By its very nature it is about learning by doing in a scientific way to deal with uncertainty. It is a structured iterative process of decision-making which treats human interventions in natural ecosystems as experimental probes.

Adaptive management is forward-looking, explicit in its purpose, inclusive, based on co-learning, pragmatic, action oriented, flexible, and continually improving. Thorough planning preceeds adaptive decision-making, the latter involving consciously predicting and documenting the likely outcome of decisions while acknowledging the uncertainties. The management plan is a set of actions, with targets.

Reflection on monitoring results is done against the targets and predicted outcomes. Future plans, objectives or understanding are adapted accordingly.



THE LEARNING STRATEGY - ADAPTIVE PLANNING

Define decision-making environment

Establish a vision

Action: Engage with staff and selected stakeholders to establish a vision and high-level objective relating to learning and knowledge that will clearly support the organisation's overall vision.

Concepts to consider: Commit the organisation to effective co-learning. Acknowledge that the very nature of learning is such that it pervades every aspect of natural resource management. Commit the organisation to becoming good at:

- **Acquiring knowledge** (*i.e.* learning) from external sources.
- **Creating knowledge** internally by effective processing of acquired knowledge.
- **Sharing knowledge** among all concerned, internally and externally.
- **Adapting** when necessary on the basis of new knowledge.

Define decision-making environment (cont.)

Understand the context

Action: Understand the implications of the global, national, and regional realities and uncertainties within which learning needs to take place.

Concepts to consider: Include **S**ocial, **T**echnological, **E**conomic, **E**nvironmental, and **P**olitical issues. Specific knowledge-related realities and uncertainties of natural resource management are:

- **All knowledge should be acknowledged**. Knowledge that is scientific, local, traditional, practical, political, etc. should be considered with empathy. Genuine participation in this broad learning system is critical.

- **Social-ecological systems are complex**. The organisation's management approach can be profoundly influenced by the bottom-up self organisation and the unpredictability typically associated with complex systems. (See box on Page 10.)

- **External knowledge-related realities**. Globally there is ever-increasing potential for data and information overload and an increasing rate of knowledge production, availability and mobility.

Concepts to consider (cont.):

- **External knowledge-related uncertainties**. There can be future uncertainty relating to a political situation, availability of quality tertiary graduates, and environmental values and attitudes.

- **Internal knowledge-related realities**. The organisation may be understaffed making participation in time-consuming learning practices, like reflection, difficult.

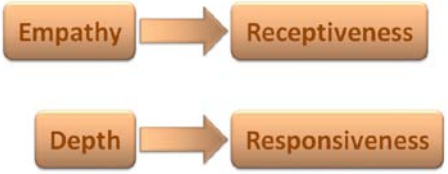
- **Internal knowledge-related uncertainties**. The sustained availability of experienced mentors may be affected by high staff turnover.

Define decision-making environment (cont.)

Define values

Action: Identify, discuss and adopt the values (or operating principles) that will guide learning-related management.

Concepts to consider: An effective and efficient organisation responsible for natural resource management must be both acutely receptive and convincingly responsive. This is achieved by being empathetic on the one hand and having knowledge depth on the other.



These are underpinned by the following fundamentally enabling learning ideals:

- **Empathy** strives to nurture a culture of co-learning founded on appreciation and respect of other knowledge forms.
- **Common future focus** strives to ensure that all stakeholders have agreed to a well-defined vision of the future and that this actively determines what is learned.
- **Social knowledge sharing** strives to facilitate freely interactive sharing, inquiry, debate and negotiation of new information between learners and those with relevant knowledge.

Concepts to consider (cont.):

- **Learning by doing** strives to ensure that knowledge is also created through hands-on practical experience.
- **Patience** strives to ensure that adequate time is allowed for absorbing appropriate knowledge and that the expectations during the learning process, of all concerned, are realistic.
- **Experimentation** strives to completely embrace (allow, plan for, and learn from) provisional or exploratory initiatives that are not necessarily guaranteed to succeed or produce short-term desirable results.
- **Positive persistence** strives to ensure that learners have determined yet positive and enthusiastic attitudes to acquiring new knowledge.

Concepts to consider (cont.):

Social-ecological systems, as well as organisations, are **complex systems**. Complex does not mean complicated. An engine is complicated. It is also predictable, at least by those who put it together. A complex system has particular properties that make it *inherently* unpredictable. Being able to recognise a system as complex allows one to better understand that system at least to the extent that one understands why, in a general sense it is the way it is. It is the unpredictability of such systems that has fundamental implications for their management.

These ideals acknowledge complexity and should also underpin adaptive management.

- **Sensitive persuasion** acknowledges that complex self-organising human systems are of such a nature that they cannot function optimally within formal command and control management approaches.
- **Up close and personal** acknowledges that interpersonal face-to-face relationships are core drivers of social behaviours.
- **Expecting the unexpected** strives to create and maintain an ever-present mindset of expecting to be surprised.

Concepts to consider (cont.):

The above fundamentally enabling learning ideals should ultimately underpin two general aims, namely attracting the **right people** and providing them with the **right environment**. These require a higher level of values and operating principles.

The right people

- **Attract and retain the best minds**.
  - ***Seek and acquire exceptional skills***. Bright minds will attract bright minds. They also create organisational credibility.
  - ***Use the attractiveness of the natural resources as a lure***. The idea of working in an appealing natural environment could be used to attract new staff.
  - ***Create enabling support systems***. Ensure organisational systems that enable learning, like communications, databases and libraries, are in place and that administrative burdens are minimised.

Concepts to consider (cont.):

- ***Nurture a network of strategic relationships***. Don't try to create in-house expertise on everything. Cultivate a network of stakeholders, academics, consultants and previous employees with valuable knowledge.

Nurture all.

- ***Experiment with opportunities***. Explore explicitly how to make the most of each person in the organisation. Provide opportunities for all to flourish.

- ***Be receptive and responsive***. Acknowledge the existence of people who may have unaligned agendas. Don't underestimate the damage they can do. Look out for signs of emerging unacceptable behaviour. Respond sensitively and with empathy when unacceptable behaviour does emerge. Get to the core of the causes and address them.

- ***Establish learning standards up front***. Sensitise new staff to the learning standards expected of them (e.g. common future focus, social knowledge sharing, and empathy).

Concepts to consider (cont.):

The right environment

- **Build knowledge breadth and depth**. Cover all bases, some in depth. Create sufficient knowledge within the organisation to be able to effectively identify, absorb and exploit external knowledge. Balance experts (for mentoring and hence faster learning) and novices (for succession). Have at least one person skilled at integrating.

- **Learn and unlearn**. Encourage continuous questioning and learning. Capture learning in explicit form whenever possible. *Know when to unlearn* (i.e. let go of previous knowledge in favour of better knowledge): Use mavericks to test paradigms. Reflect periodically on underlying assumptions. *Know how to unlearn*: It requires individual effort but give it time. Manage sensitively because people need to move out of comfort zones. Implement sensitive exit strategies with staff leaving the organisation.

- **Respond rapidly but reflect patiently**. The necessity for responding efficiently to crises is a reality. Build a supportive network of knowledge breadth and especially depth. Create strategic alliances with organisations such as NGOs, universities, parastatals and government departments. Look to the experienced people for guidance but don't abuse them. Even in the face of short-term pressures, create opportunities for reflection.

Define decision-making environment (cont.)

Define values (cont.)

Concepts to consider (cont.):

- **Facilitate individual and group learning**. Acknowledge that both are important. Explicitly create opportunities that cater for the way each individual prefers to learn.

People use different symbolic languages to collect and process experiences:

Auditory - through words and sounds;
Visual - through sight and visual images (e.g. photos, maps and diagrams); and
Kinesthetic - through actions, touch, spatial awareness, smell and movement.

Manage group learning: Create the physical space. Deliberately employ some team players and those with networks. Nurture effective communities of practice by supporting and influencing their identity, engagement, alignment, and impact (don't command and control). Encourage learning with empathy.

A **community of practice** is a group that emerges naturally, organising itself. They share a passion and meet regularly and informally to learn and practice how to do things better. Identity is defined by the task (e.g. fishing or photography) and the specific area of knowledge (e.g. yellowfish or underwater photography). The community typically develops relationships that enable very effective knowledge sharing and problem solving. It is not merely a community of interest – they actually practice something and accumulate considerable practical knowledge (i.e. depth) over time. One of the primary implications for management is that such self-organising communities don't take kindly to command and control. They need nurturing and sensitive persuasion.

Concepts to consider (cont.):

- **Balance theory and practice**. Theories and good models (especially simple conceptual models) and experience help put observations and information in context and they improve understanding. Align tasks if possible to the deeply embedded life interests of staff members (are they natural theorists or natural field workers?). Create opportunities for learning by doing. Physically seeing, smelling, and feeling your water resources can provide deep everlasting perceptions and perspectives.

- **Build on prior knowledge but also experiment**. Prior knowledge is critical for responding effectively to a new challenge. Ensure staff responsibilities are well aligned with this knowledge. However, structured experimentation outside the comfort zone of prior knowledge is also a mechanism for systematically exploring and choosing future options. Encourage social learning in the extended learning network to prevent the organisation becoming self-referential (i.e. only referring to its own knowledge).

Concepts to consider (cont.):

- **Apply single-, double- and triple-loop thinking**. Apply single-loop thinking (much like quality control) to ensure you not only maintain high standards in what you practice but improve on them when necessary. Reflect on core assumptions (double-loop thinking) and even the underlying values (triple-loop thinking) or paradigms that underpinned an action or strategy whether it was successful or not. Capture the learning explicitly. Do things differently in future. This kind of thinking also helps prioritise the relevance of incoming knowledge (and hence manage information overload more effectively). All three kinds of thinking are fundamental to effective adaptive management.

Understand the system

Action: Probe in greater depth the general nature of the organisation itself and its social-ecological system. A critical input to this process is the current understanding of the status quo in the area, including all issues relating to resource use and protection. The purpose is to identify vital attributes, determinants, and values which are core factors in the way the systems (social, ecological, economic, etc.) in the area function.

Once identified, examine these in depth and identify the factors that strengthen or weaken the vital attributes.

Develop objectives

Action: Develop learning-related objectives that are agreed to by all. Break down into achievable management goals.

Concepts to consider: Given the nature of learning and knowledge, acknowledge the need for a nurturing management style rather than one that applies a quantitative "tick-box" mentality to monitoring progress and assessing staff performance. Accordingly, do not overemphasise quantifiable learning targets. Emphasis should be on job satisfaction and qualitative assessments of the value of learning-related achievements.

Relate objectives and goals to the above-mentioned contexts of the right people and the right environment and based them on the shared understanding developed within the organisation of the above learning ideals.

THE LEARNING STRATEGY - ADAPTIVE DECISION-MAKING

Explore actions and outcomes

Action: Explore a variety of learning-related actions and explicitly consider likely outcomes in each case.

Concepts to consider: This brainstorming prepares the organisation for making decisions and helps weigh up options.

- **Identify potential advantages**. Be explicit on the main reasons for adopting each action.
- **Consider the practical implications**. How will the action be executed in practice? Is the manpower and competence available?
- **Identify potential pitfalls**. Identify explicitly what might go wrong or what might impede implementation of the action.

Develop a management plan

Action: Identify, discuss and adopt the values (or operating principles) that will guide learning-related management.

Concepts to consider: Specific actions can include:

- **Establish data management facilities**. Information management relies on a sound data management system. Put in place appropriate systems for data acquisition, storage, and retrieval.

- **Establish information management facilities**. Knowledge management relies on a sound information management system. Examine information requirements of staff members. If appropriate, establish a library of relevant publications. Both data and information management facilities address the organisation's vision of an effective learning organisation being able to acquire knowledge effectively.

- **Identify group learning facilities**. Give specific attention to allocating pleasing and practical locations for groups to come together, either at a moment's notice or with more foresight, possibly at more remote locations for more in-depth interactions and social knowledge sharing.

Concepts to consider (cont.):

- **Identify opportunities for group learning and "learning by doing"**. Identify opportunities for staff to work and learn together in an integrated manner on real natural resource management projects.

- **Capture reflective learning**. Devise a system that facilitates learning-based deep reflection on successes and failures. Consider how the outputs of such sessions will be captured and how the learning will subsequently be made available. This issue directly addresses the organisation's vision of an effective learning organisation being able to create and share new knowledge.

- **Develop a poster of learning ideals**. Develop a poster (or series of posters) that capture the basic learning ideals in a simple, pleasing and communicative manner that is relevant to the natural resource area. Display in the organisation building especially in locations frequented by visitors and external stakeholders, i.e. be proud of your approach.

- **Predict and document the expected outcomes**. For each of the above specific actions, predict and document the consequences for learning and knowledge management.

Implement the plan

Action: Implement the plan in a spirit of receptiveness, sensitivity, responsiveness and a willingness to adapt.

Concepts to consider:

- The learning journey is about constant vigilance.
- Employ an external learning specialist to facilitate your process and add to the richness of your journey.
- Nurture tacit knowledge, i.e. that knowledge that occurs only in people's heads. Store explicit knowledge.
- Be a gardener sensitive to the environment and feedbacks from the garden. Facilitate richer growth.

Monitor, reflect and adapt

Action: Every two years (or more frequently) reflect on the degree to which the installed learning-related systems have achieved the documented objectives and outcomes. Between such formal overall reviews, more frequent monitoring of sub-processes will also take place.

Concepts to consider: Ask staff members to qualitatively assess the effectiveness of the systems in an open and honest manner. Consider a reward system, at least entailing recognition within the organisation, for outstanding contributions to learning and facilitating an organisational learning culture. If learning-related systems are not up to expectations, ensure there are explicit management decisions to refine or replace the systems.

Sub-processes reviewed more frequently may include:

- The attainment of specific high-level and low-level objectives.
- The effectiveness of recruiting appropriate staff.
- Progress in updating and maintaining data and information processes.
- Effectiveness of group learning and "learning by doing" projects.

RECOMMENDED READING

Adaptive management: SANParks (2008). *A framework for developing and implementing management plans for South African national parks*. Available online: http://www.sanparks.org/parks/kruger/conservation/scientific/key_issues/

Co-management: Berkes F (2009). Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management* **90**: 1692–1702.

Communities of practice: Wenger E, McDermott RA, Snyder W (2002). *A guide to managing knowledge: Cultivating communities of practice*. Harvard Business School Press.

Complex adaptive systems: Pahl-Wostl C (2007). The implications of complexity for integrated resources management. *Environmental Modelling & Software* **22**: 561-569. Available online at www.sciencedirect.com.

Learning organisations: Senge PM (2006). The Fifth Discipline: The Art and Practice of the Learning Organisation. Random House, London.

Cross-sector policy: Roux DJ, Nel J, MacKay HM and Ashton PJ (2006). *Cross-sector policy objectives for conserving South Africa's inland water biodiversity*. Report TT 276/06. Water Research Commission, Pretoria.
Available online: http://www.waternet.co.za/rivercons_/publish.html

Leadership: Greenleaf RK (2002). *Servant Leadership: A Journey into the Nature of Legitimate Power & Greatness*. Paulist Press, New York.

Social ecological systems: Holling CS (2001). Understanding the complexity of economic, ecological and social systems. *Ecosystems* **4**: 390-405.