Landcare Research
Manaaki Whenua

Social Learning

A basis for practice in environmental management

CHAPTER 22 : HATCHED

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Summary

Environmental agencies are increasingly being asked to formulate local, regional and national responses to environmental problems that are highly complex, made up of multiple factors, contested or unknown science, and conflicting demands. Social learning is emerging as a useful framework for understanding the human relationship, knowledge generation, and decision-making challenges posed by complex environmental problems.

A social learning approach draws attention to five areas for focusing awareness and developing practice in complex problem solving: These are:

1. How to improve the **learning** of individuals, groups and organisations
2. How to enable systems **thinking** and the integration of different information
3. How to work with and improve the **social/institutional** conditions for complex problem solving and
4. How to work-manage group participation and interaction
5. The fifth factor is **monitoring and evaluation**, which is the engine that drives continuous improvement in practice.

The social learning framework offered here can be used to understand and improve the capacity of any problem solving and management situation. It can be used in its entirety or people may select elements of the framework for specific phases of their projects.

PICKING A WAY THROUGH PROBLEMS: THE CHALLENGE FOR ENVIRONMENTAL MANAGEMENT AGENCIES

Much has been said about complex problems in the environmental arena and it is easy to see that the challenges posed by (for instance) climate change, shifting land-use demands, energy shortages and competing demands for restricted water resources test the problem-solving capacity of local and national government organisations. These problems are viewed differently by the multiple organisations, sectors and communities that are interested and affected by the situation. In fact there may be such a diversity of ways of seeing one problem that it might be more honest to regard 'the problem' as a web of interrelated problems – each defined by the responsibilities, mandates and particular interests of the various agencies and groups involved. Furthermore the solutions on offer may, when applied, fix one part of the problem only to reveal another. In fact what we are looking at trying to manage is not a problem but a problem system – subject to a high number of influencing factors and key players and with flexible boundaries that can be difficult to define.

What further characterises these complex problems is high levels of uncertainty (see, for example, Chapter 19). Information about the problem will most likely be incomplete (perhaps even some crucial factors may be undeterminable), and when available it can be disputed by different stakeholders on the basis of its relevance or meaning.

What is clear about these problem situations is that linear approaches to planning and management are inadequate. It is simply not possible to plan any great distance ahead with confidence that the predictions and premise on which the plan is based will stay valid in the future. Equally such complex situations do not lend themselves to resolution in discrete periods of time. Instead they require ongoing attention. Moreover the idea that a single agency, whether national, regional or local, might be responsible or even capable of fully resolving these issues no longer fits. These issues require multi-scale, polycentric governance that recognises that multiple stakeholders in different institutional settings contribute to the overall management of a resource[1] In the face of such complexity, management approaches are more usefully seen as processes of ongoing learning and negotiation rather than the search for the optimal solution. The heart of a learning-oriented management approach is good communication and ways of sharing different perspectives, and the development of adaptive group strategies for problem solving. In recent times, the shorthand for this approach to problem solving has become known as social learning.[2]

In this paper we discuss social learning (see Box 1) as a practical framework for exploring the critical elements of complex environmental problem solving.

box 1: SOCIAL LEARNING

Social learning has been used to refer to: learning about social issues; learning by groups of people; and learning that results in recognisable social entities such as collective decision making procedures.[3] However, in recent times the concept has received wide attention in the field of environmental management where it is emerging as an overarching concept reflecting growing understanding about the ways in which different agencies (e.g. planners, policymakers, NGOs), and different knowledge sources (e.g. science research, landowner, indigenous peoples) can be brought together to learn about and make decisions about complex problems.

The 'learning' part of social learning is based on a well-known theory and practice known as experiential based learning. The primary writer in this field, Kolb,[4] describes a cycle of events that enables people to work together to learn and create knowledge. This starts with (1) revealing some concrete experience; (2) reflecting on that experience; (3) forming abstract concepts and generalisations about what to do next; and (4) testing the implications of these concepts in new situations, which in turn leads to new experiences and a new cycle of learning.

MANAGEMENT APPROACHES FOR ADDRESSING COMPLEX PROBLEMS

Planning and environmental agencies are no strangers to dealing with multiple interests and have long experience in responding to competing views about how a resource should be managed. They often have a highly developed repertoire of approaches designed to identify the concerns, values and interests of different stakeholders, determining a path forward in the midst of competing demands, and developing a set of decisions that, if not ubiquitously, are at least widely accepted as reasonable. In short, what many agencies have become very good at is making judgments in situations where public views are divergent or even polarised.

Trends in public planning approaches in the last decade have moved beyond making judgments in polarised situations, to fostering consensus-based decision making between the different stakeholder groups involved. Numerous examples of this exist in New Zealand such as the Christchurch City Council public deliberation over wastewater treatment.[5] However, more complex problems call for not just agreement between people but also collaborative and coordinated responses across multiple communities and agencies. What are also needed are institutional arrangements that not only are open to the input of multiple stakeholders but are designed to contribute to their collective learning, capacity and empowerment to respond to the problem at hand. The purpose of these institutional arrangements is to foster amongst the many players and the entire problem system the capacity for adaptation and action that leads to a more resilient solution.

This is significant because it implies a shift in role for environmental management agencies from that described in the previous two paragraphs (accumulating all the information required, reconciling views and determining a course of action) to the orchestration of social learning. In this context, agencies might judge the success of their efforts to respond to a problem situation not only by reaching a *decision* but also through the process – *how the parties involved improved their collective capacity to act and respond*.

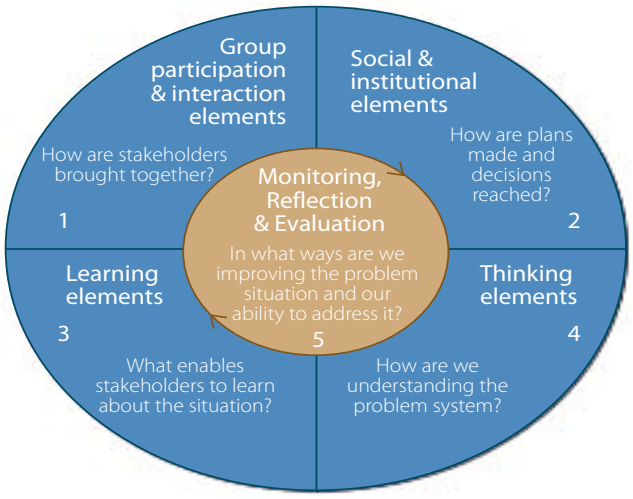

Figure 1 Social learning – five areas important to addressing complex situations.

A SOCIAL LEARNING FRAMEWORK

In addition to the implications for institutional arrangements discussed above, the framework of key elements that support social learning (see Fig. 1) indicate that a number of factors require attention when designing ways to respond to complex environmental problems. These include:

- How platforms (opportunities) for interaction between stakeholders will be conceived and handled
- How the diverse forms of data and information will be collated, interpreted, shared and accessed
- How critical assumptions about the problem will be revealed and scrutinised so that understanding of the problem moves beyond superficial observations and reaches to the heart of the challenge

The social learning framework we propose provides elements to address these three factors, and is made up of five categories of elements:

1. **Group participation and interaction elements** – ways of bringing stakeholders together
2. **Social and institutional elements** – ways of making decisions and planning actions
3. **Thinking elements** – ways of understanding the problem system
4. **Learning elements** – ways of supporting learning
5. **Reflection, evaluation and monitoring** – ways of tracking progress and developing social learning practice

The use of photography to support dialogue and learning in Watershed Talk worked on many levels, enabling participants to capture their ideas visually, and present them in ways that stimulated conversation, and opened topics up to multiple viewpoints These two images were taken by participants as an expression of concerns and values they had for the catchment. Photo A (left) showing a newly posted warning about Didymo algae prompted debate on threats to waterways and what were effective ways to change people's practices; photo B (right), of a local church raised questions about how the social networks of the catchment were changing."

The last element is the engine that drives continuous improvement in practice. Another way of viewing these elements is as 'ingredients' in the design of successful approaches to complex problem solving. We now explore each category in detail.

Group participation and interaction

Forums for managing complex situations go beyond arranging meetings of stakeholder representatives to express their views. Their purpose is twofold:

- To foster diversity of input from the different communities, groups and agencies that have an understanding of the problem situation and a role to play in addressing it
- To develop the partnerships and collaboration (dependent on both willingness and ability) to work together

Creating collaborative learning platforms (shorthand for 'opportunities for working and learning together' – see examples in Box 2) includes consideration of both physical components, such as the location and timing of events, and process components, such as the way in which participants are engaged and conversation is facilitated. The relationship between the formula of an event, those who participate and the quality of the dialogue is now widely appreciated[6] and there are many examples of platforms for dialogue and learning that have made use of relatively simple low-cost strategies that shift unproductive group dynamics and foster creative input by participants. For example the Watershed Talk project in the Motueka Catchment (2007–2009)[7] made deliberate use of photos taken by project participants because it provided a common visual language to share different types of knowledge and experiences. This acted to shift the focus of discussion from the person speaking to what it was they were saying. Also, in contrast to the different status participants in Watershed Talk might have been given in a more traditional meeting forum (as for example professional planners, expert scientists or farmers),

box 2: EXAMPLES OF NEW APPROACHES TO DEVELOPING PLATFORMS FOR COLLABORATIVE LEARNING

Christchurch City Council – *communities of practice* http://www.landcareresearch.co.nz/research/sustainablesoc/social/cops.asp: This was designed as an organisational-level platform to support conversations on cross-organisational issues such as sustainability or planning for the needs of the elderly[9]

Ministry of Research, Science and Technology *Dialogue projects* http://www.morst.govt.nz/current-work/science-in-society/dialogue/: These are four case studies exploring new ways to manage dialogue around contested science and technology issues at national and regional/catchment scale.[10]

Watershed Talk: This platform worked with groups of stakeholders to cultivate ideas and action around environmental challenges facing catchment communities[11] http://icm.landcareresearch.co.nz/research/research.asp?research_id=68&theme_id=4

communicating through photographic images gave equal authority to all participants in the conversation.

Collaborative platforms are not the same as meetings, although they may include them. Particularly for complex-problem-solving strategies designed to work at regional scale, collaborative platforms may be virtual, or based on networks, or based on cross-institutional or sector-based communities of practice.[8] Different scales require different forms of collaborative platforms.

Social and institutional elements

As discussed above, managing the political/decision-making context in order to support collective learning by all players requires some changes to the current way to doing business. Essentially complex environmental problem solving poses two challenges to the existing social and institutional arrangements around how plans and decisions are made. The first is the ability to integrate knowledge and foster the united efforts of the many stakeholders (see Box 3). Engagement with multiple stakeholders will often take different forms, and occur at multiple points along the decision-making timeline, and is sometimes referred to as 'structural openness'. The second is the ability to deal with the uncertainty that surrounds the situation and the need to learn through by trial and error (however unpalatable the latter might be). Building in flexibility and responsiveness to the decision-making process to deal with uncertainty can be termed 'structured unpredictability'.

Institutional arrangements can often seem immutable and there may not be easy options for doing things differently. Nevertheless if the existing approaches to addressing complex environmental situations are not providing for structural openness and structured unpredictability, then assessing of what it *is* possible to do differently is required. Questions to explore include:

- How open are institutional arrangements to input from different stakeholders? Are they able to not just incorporate different stakeholder's preferences but also use the different forms of knowledge they hold in order to build a better understanding of the situation?
- How do current institutional arrangements respond to new knowledge that changes the understanding of the problem or changes the proposed solutions to the problem? For example, to what extent are administrative devices like plans, policies and projects able to respond to changes in understanding that consequently make existing plans or policies redundant and new actions necessary?
- If the current approaches to decision making cannot allow for the dynamism and multiple input required, is it possible to work outside standard arrangements? If so what would

box 3: SUPPORTING ADAPTIVE AND INCLUSIVE MANAGEMENT[12]

There is no simple recipe for changing institutional arrangements to become more adaptive and inclusive as this evolves in different ways suitable to the context of the problem situation, and the experience, resources and abilities of those involved. One successful example has been the long-term work developing an adaptive approach in the high country (1994–2000). The most significant of the programme's high country successes revolve around capacity building and information sharing, and represent a mix of first- and second-order outcomes. For example the programme clearly supported improvements in relationships between conservation managers and farming interests resulting from conflict management exercises.[13] In the same exercise new ground was broken, by the community inviting a scientist to play a mediating role in supporting better communication and relationships. The Tussock Grasslands Management Information System represents one of the first Internet-based systems to link local and science knowledge.[14] Beyond the high country, the programme can also point to other areas where the Integrated System for Knowledge Management (ISKM) approach has been used to support community-based learning initiatives. These areas include pest management in New Zealand,[15] learning about issues related to oil and gas in British Columbia, Canada,[16] and understanding the links between land use practices and livelihoods around Lake Victoria in Africa.[17] The ISKM approach has also been used as an evaluation framework to look at an environmental health surveillance system in California.[18]

be needed to ensure these alternative efforts are able to make a genuine contribution?

Successful examples of doing things using social learning include community-based catchment management programmes (http://icm.landcareresearch.co.nz/) However, while these programmes have often included good processes for tapping into knowledge, ideas and energy that were not reached through normal planning processes, they have not been compatible with statutory decision-making arrangements – which has led to frustration for those involved who have seen their efforts undermined.

Lastly consideration has to be given to whether there are power imbalances between stakeholders and where these need to be addressed in order to create an effective process and effective solutions. Stakeholder analysis (see Chapter 25) provides an approach for analysing needs, barriers and opportunities for real participation by critical stakeholders.

Thinking elements

No structured response to complex problem solving can be developed without a facilitated approach to understanding the problem system (systems thinking) and from this determining the core components open to intervention or leverage.[19] Without this, complex problem solving can be hampered by incorrect or incomplete assumptions about the problem definition, or may miss critical knowledge about the problem (e.g. transport planning is connecting people with jobs, goods and services rather than roads).

In recent years there are many structured approaches to systems thinking developed by theorists and practitioners (e.g. Checkland's soft systems methodology.[20]) These approaches first include a means for capturing information from different sources. This information may be interpreted by different stakeholders in varying ways, in terms of what they think is important or what conclusions they draw from it, so a second core ingredient of systems thinking is a process to enable people to collectively make sense of the information that will build a picture of the important components of the problem system.

Techniques for using a systems approach to problem solving do not have to be highly technical.. Frameworks, pictures and representations are powerful aids to help people unlock the knowledge they have and discuss this with others. Using such techniques can be described as a form of participatory modelling.[21] In systems thinking approaches, collective model building is regarded as important (if not more important) as attaining precision in the data and outcomes. Managing dialogue and debate and enabling the participants in the process to incorporate new information into their own context are critical. Proponents argue that following a participatory modelling approach will in itself affect change, as the participants alter their views and become aware of the assumptions and values that are influencing their and their organisation's actions.

Learning elements

Building knowledge about complex problems amongst a collective of different stakeholders is an incremental process.

box 4: MANAGING CONFLICT IS IMPORTANT

A good example of how important it is to understand the underlying causes of conflict was provided by Department of Conservation (DOC) staff as part of their ongoing efforts to protect the black stilt (kakī), a rare New Zealand wading bird. The agency was concerned to gain better access to bird habitat on private land, and to increase private landholder involvement in recovery efforts. However, when landholders were canvassed to ascertain their support for a meeting to resolve these issues, it became apparent that they saw issues over the black stilt as symptoms of a wider problem of 'lack of trust' between farming families and DOC. In response, addressing the issue of access to the black stilt was postponed, and a series of workshops were held to improve relationships between local DOC staff and landholders.[22] Common ground was reached during these workshops and a number of positive steps to improve working relationships were identified and implemented. Building trust in this way is one of the main reasons why successful participation processes take time. Importantly, in this case, both parties regarded this exercise as being a first step in a much longer process.[23]

It is less a situation of passing on information (common in tech-transfer schemes) than of creating the right environment for participants to actively interpret new ideas to make them relevant to their own situation. In this active meaning-making process, dialogue and even conflict are likely to occur and should be planned for in the process design (see Box 4). This can be addressed by something as simple as changing the venue of a meeting to one less familiar to people and therefore less likely to result in people falling into old habits of interaction, but in some cases it may mean first spending time addressing the root causes of existing conflict.

Researchers who have looked at the different kinds of learning required for addressing complex problems observe a number of critical aspects that can be grouped into three key points:

- First, the learning that takes place must go beyond just revealing the basic social, environmental or physical facts of the problem system. Rather it needs to explore the attitudes, values and relationships that have a critical influence on the situation. This has been termed the 'soft relational and hard factual aspects of analyzing and managing a human-environment system'.[24] Another way of putting this is that social learning is about both content (views, ideas, values, information, and data) and process (group interactions, relationships, networks, and ways of problem solving).[25]
- Second, processes must include learning that challenges fundamental assumptions about the system and consequently contributes to building knowledge about the system as a whole. This is referred to as 'double loop' learning and draws on the organisational psychology work of Argyris and Schön.[26]
- Lastly, the approach taken should allow for building knowledge through practice and experience. This means treating problem solving as an active experiment – trial and error – 'suck it and see!' This does mean some steps have to be built into the problem-solving process: (1) clarifying what it is that people are trying to learn; (2) identifying markers – i.e. things that will be observed or monitored that will indicate what changes are happening; and (3) establishing a regular process for assessing these markers, interpreting their meaning and deciding what to do about this. Again this does not have to be a highly sophisticated research approach. Action research methodologies have

box 5: DOUBLE-LOOP LEARNING

Argyris and Schön[27] made a distinction between what they termed 'double and single loop' learning which has been widely recognised as making a substantive contribution to understanding how organisations learn and change. In summary; single-loop learning is a simple 'error detection' level of learning that has no implications for the wider overall policies or structures of an organisation. Double-loop learning occurs when the new information results in modification of an organisation's underlying norms, policies and objectives.

For example if a land manager views her enterprise solely in terms of sheep production and notes that the vegetation condition of the land is deteriorating, the action strategy will likely be to try a different grazing regime. In such a case when new strategies are used to support the same governing variable (i.e. the land as a sheep production system) this is called single-loop learning. Another example of single-loop learning might be when funders of research notice that stakeholders are not taking up the research generated from a science research programme. The response might be for the scientists to find a 'friendly' group of people to work with, i.e. those who are happy to acknowledge the scientist as the unquestioned expert.

An alternative response to detection of error is to question the governing variables themselves (double-loop learning). For example rather than try a new grazing strategy, the land manager may choose to take a wider look and question whether the land can continued to be grazed and whether her enterprise could better function as a tourism or forestry system. Equally the scientist may choose to involve appropriate stakeholder groups in a more collaborative approach, changing their role to one of a co-researcher and recognising that the role of 'expert' is more a matter of perspective. These cases are called double-loop learning, and involve more fundamental shifts in people's belief systems and values. [28]

evolved specifically to enable those who are engaged in some form of work or practice to learn from their experience.

A resource site on Action Research is provided by Bob Dick, Southern Cross University, Australia
http://www.scu.edu.au/schools/gcm/ar/arhome.html

Reflection, monitoring and evaluation

In this chapter we have focused on understanding social learning as a composite of elements to support complex environmental problem solving, each with a theoretical basis and experience in practice . However, central to the engine of social learning is *'reflection, monitoring and evaluation'.* This means more than simply 'tracking progress'. Addressing complex environmental problems is reliant on in-depth reflection on what is known about the problem system and the implications for action that stem from this, monitoring to uncover what is happening, and evaluation to compare this to desired objectives and outcomes. All three are fundamental to an experimental and adaptive approach to environmental management.

Keen and colleagues[29] observe:
Reflectivity in environmental management is an important lever for social change because it can reveal how theoretical, cultural, institutional and political contexts affect our learning processes, actions and values.

They go onto describe the process of reflection as a series of learning cycles – diagnosing what matters, designing what could be, doing what can be done, and developing a deeper understanding of what has worked, what has not, and the significance of this, through evaluation. This process of reflection needs to occur at a range of levels, for instance at a personal and interpersonal level (e.g. between people and groups); at a community level (e.g. in the process of identifying shared visions with a geographic community); and at a social level (e.g. through evaluation of the impacts of laws and regulations by central government).

Building reflection, monitoring and evaluation opportunities into the four design aspects of responding to complex problem solving outlined in the framework is critical, and there are many options for how to achieve this. For instance in designing and implementing collaborative platforms, stakeholder analysis techniques are useful to both plan for and assess the participation of different stakeholders (see Chapter 25). Also evaluation based on a checklist approach can support group learning about their processes of working together (see Chapter 26).

Further, the framework of key elements in social learning (see Figs 1 and 2) can itself be used to prompt appropriate questioning about how well the process has been designed and implemented. Using evaluation processes that build knowledge about how to improve a programme or situation (rather than evaluation based on accountability and delivery) will advance environmental management/problem solving process as a whole.

SOCIAL LEARNING – ORIGINS AND VALUE TO PRACTITIONERS

Every social theory facilitates the pursuit of some, but not all, courses of action and thus, encourages us to change or accept the world as it is, to say yea or nay to it.[30]

In this chapter we have deliberately left comments on social learning – its origins and underlying theory – to last. 'Social learning' is a concept with a long history, with divergent theoretical roots, and which appears in widely different contexts. For instance behavioural psychology uses the term social learning to refer to the kind of learning by individuals that happens through observation or interaction with others around them – a form of mimicry.[31] In contrast, in the fields of planning, policy making and development, social learning has often been used to refer to 'learning about social issues' or 'learning by groups'. In recent times social learning has become a popular term in the literature on natural resource management where it has been used essentially to describe processes of learning and change that involve multiple stakeholders.

As a comprehensive concept, social learning can be a useful framework for maintaining critical observation not

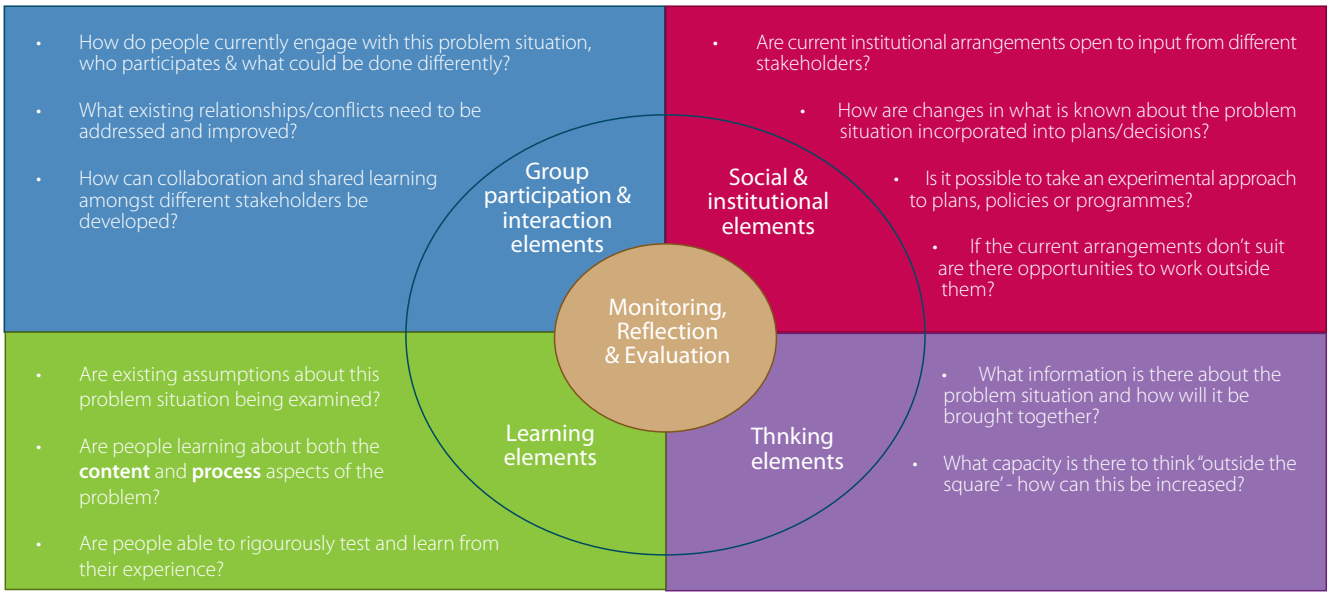

Figure 2 Question prompts to support development of an improved social learning capacity in a problem system.

only on the immediate problem-solving task, but also on the learning and social interchange processes that enable problem situations to be continuously addressed. However, the social learning framework presented here is not a recipe, but rather, as suggested before, a set of ingredients that can be put together in many different ways. Having a better understanding of the critical elements and their relationship to one another is helpful, but the way programmes, or activities, are designed to improve the social learning capacity to address a complex situation is largely a creative one. Moreover, since no problem situation is likely to be the same, this relies on maintaining a watchful eye for what is working and what is not. This watchfulness is the central monitoring, reflection and evaluation element in the diagram, and Fig. 32outlines some basic prompt questions that might be used to support an active process of developing and improving the social learning capacity in any given situation.

It is also important to keep in mind the practical limitations that most people actively involved in addressing complex problem situations might face. While it is helpful to think across all the elements of social learning, it may not be possible to work on all at once. In practice, practitioners, planners, policy analysts and environmental managers may choose to use resources at their disposal to improve the social learning potential of any given situation by focusing efforts on one or more of the core elements. For example, they may examine how to improve the structural openness of the decision-making situation or to foster collective learning skills of the key stakeholders in the problem.

Picking the areas that are most amenable to influence and change is a valid strategy in a resource-constrained reality – particularly if the selection of areas is based upon where there are skills that could be used and developed, where there are resources to enable a successful project or change in practice, and where any changes initiated are deemed important to improving the problem situation. Moreover there is still much that can be learnt about each of the component areas individually; the last word has certainly not been written on building collaborative opportunities for new and unfamiliar stakeholders to work together, or how to improve and deepen learning about complex problem systems.

Presenting ideas from the Watershed Talk project to a group of Tasman District Council staff, ICM scientists, and people from the Motueka catchment community. Photographs were also used in this session to open up discussion.

WANT TO FIND OUT MORE?

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