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Lenses for learning: Visual techniques in natural resource management

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ABSTRACT

In this study, we explored the use of selected visual techniques (e.g. video, photography, diagramming) in facilitating learning among Indigenous communities living in remote protected areas at sites in Vietnam and Australia. The techniques were employed during interviews and workshops aimed at accessing and enhancing local peoples' perspectives on their landscape and on specific natural resource management issues. The effectiveness of the different techniques for enabling learning varied markedly with the context, highlighting the need for facilitator skill and flexibility in application of techniques. Visual techniques helped to engage participants; encourage unrestrained and lateral thinking; provide opportunities for self-expression and reflection; and to expose participants to perspectives of other community members. Valuable insights emerged on broad aspects of learning and these were incorporated into a simple model that highlights three types of conceptualisation found to be important in these processes.

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1. Introduction

1.1. Visual techniques in research

Visual techniques such as film and photography have long been used in human based research disciplines, for example sociology (Becker, 1974), psychology (Laing, 1980), human geography (Aitken and Wingate, 1993), education (Williamson, 1987) and especially anthropology (Bateson and Mead, 1942). Despite this history over several decades, the recognition of visual techniques as credible research tools has been rather slow in some areas – particularly sociology, where there has historically been a 'barrage of criticism' of visual methods (Harper, 2004:232). However, a number of texts have appeared from various disciplines recently on visual methods (e.g., Banks, 2001; Pink, 2007; Prosser, 1998) and on analysis of visual representations (e.g., Evans and Hall, 1999; Rose, 2000).

The way visual methods have been used is highly diverse and their employment across the disciplines has been underpinned by a range of theoretical concepts. In earlier work, visual methods were commonly seen as tools for documentation and dissemination, and this is often still the main emphasis. However, visual approaches have broadened over time to include concepts such as

visual ethnography (in anthropology, e.g., Stadhams, 2004) and visual elicitation (in sociology, e.g., Collier and Collier, 1991; Harrison, 2002). And following a general trend in development and social research towards more 'bottom up' approaches, researchers from various disciplines have also been developing numerous participatory visual techniques. Examples are participant generated photography (or 'photo voice' e.g., Wang and Pies, 2004) and participatory video (e.g., Kondon, 2003).

The employment of participatory visual techniques has expanded also among practitioners in development (e.g., Braden, 1999), community health (e.g., Kesby, 2000), rural and agricultural development (Chambers, 1994), and to a lesser degree in natural resource management (NRM: Bussink, 2003). Visual techniques became particularly popular within approaches such as participatory rapid appraisal (PRA – e.g., Chambers, 1997) and participatory learning and action (PLA e.g., Busza and Schunter, 2001). These include participatory mapping and geographic information systems (e.g., McCall, 2003), photography (e.g., Kolb, 2008), video (e.g., Van Mele, 2006), theatre (e.g., Mavrocordatos, 1997), timeline and seasonal calendar analysis (Chambers, 1994) and diagramming (e.g., Umoquit et al., 2008) techniques. Some researchers and practitioners are now starting to employ sophisticated (and generally expensive) visual technology, software and support in development and NRM. Their methods include 'visualizations', in which pictures displaying important features of landscapes or future landscape scenarios are shown to participants to

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elicit responses (and preferences) and/or to communicate concepts (e.g. Lewis and Sheppard, 2006; Williams et al., 2007). Digital 3D gaming environments are also being used, where images of landscapes are recreated in consultation with local people, to record their features and associated Indigenous knowledge (Leavy et al., 2008). In the study described in this paper, the focus has been on using much simpler, cheaper and more accessible visual techniques.

The growth in use of digital visual methods – especially participatory techniques – by community development and NRM practitioners has flowed partly from the ‘explosion’ in information technology and greater accessibility and ease of use of equipment, such as cheap and disposable cameras, digital cameras and camcorders. Documentation of this type of work has grown in manuals, reports (e.g., FAO, 1991; Lunch and Lunch, 2006) and some practitioner and academic journals and texts (e.g., Braden, 1999; Frohman, 2005; Johansson, 1999; Pink, 2006; Shaw and Robertson, 1997; White, 2003). Various benefits of visual methods are widely advocated in community development literature, but reference to theory has been lacking, and limited connections have been made between field practitioners and research. Research has usually focused on single techniques, and there have been very few studies within the context of NRM, especially on combinations of visual techniques, or on the use of less expensive equipment and tools.

1.2. Research context, intention and process

In this research we studied the use of various visual techniques, as supporting tools in two larger projects designed to help understand Indigenous perspectives on two rather different and complex NRM issues, in two countries. The study set out to explore the effectiveness and versatility of techniques across very different contexts, in promoting learning about NRM issues. One project was based in Vietnam and was concerned with assessing the potential for Payments for Environmental Services (PES) for Indigenous communities in Cat Tien National Park. The other was in northern Australia and aimed to improve understanding of Indigenous community preferences for adaptation to climate change.

In this paper we explore the strengths and weaknesses of selected visual techniques in facilitating learning for deliberation on these NRM issues. Deliberation is viewed here as a process of discourse with the public, in which citizens are encouraged to ‘discover latent public values that they have in common with others, and in the process to create new public values’ (Schusler et al., 2003:312). The process at each site involved iterative cycles of activities – ‘discussion’, ‘interaction’ and ‘reflection’. and the arrival at some form of collective understanding and vision on the topics of interest in NRM. The ability to support (or enhance) these activities was built into the criteria used in assessing the visual techniques (see Section 5.1: *Features important in facilitating learning*). The key activities of discussion, interaction and reflection are further outlined under Section 2: *Conceptual framework*, and are incorporated in the core of a model developed as a guide for facilitating learning and communication (see Section 6: *Discussion*).

The visual techniques used were selected for their practicality and accessibility, i.e. availability, reasonably low cost and ease of use by non government organisations, land managers and communities in remote regions. We aimed to develop understandings of features and concepts important in facilitating learning processes, and hence the ways visual techniques can be used to strengthen these processes. A second part of the overall project was to examine how ‘visual products’ derived from these local learning processes might be used to communicate local perspectives to policy stakeholders (reported elsewhere – in

Petheram et al., in press). Although the context of the two study locations differed markedly, a common feature of the research in Vietnam and Australia was the overall purpose of the projects in which the study of visual techniques was embedded, i.e., the enhancement of inquiry with remote communities on specific NRM issues.

A main rationale for the design of this study was the contention that NRM is most effective if: (1) it is well informed about local residents’ preferences, and (2) the residents are empowered to voice opinions and have opportunity and capacity to influence decision making (Bessette, 2006; Lorenzi et al., 2007). The intent was for the researchers¹ and participants to develop deep understandings of each other’s perspectives, and ways that local views could be incorporated into the planning of NRM. Much literature suggests that participatory inquiry can assist in the facilitation of learning and communication processes and hence in working towards such goals (e.g., Burke, 1968; Schusler et al., 2003).

Three further assumptions underpinned the research at all sites: (a) that a fundamental requirement in NRM is sound communication within and between communities and with other stakeholders (Bessette, 2006); (b) that facilitation of effective ‘learning’ can lead to improved communication within communities, and vice versa (Upreti, 2001), and (c) that well designed learning processes can help community members develop a collective perspective and vision – which is important in communicating and negotiating with other stakeholders (Schusler et al., 2003).

2. Conceptual framework

The research drew on constructivism (Bodner, 1986), an epistemology which holds that knowledge and meaning is constructed within people’s social interactions and experiences. This informed the research, especially in terms of the practice of facilitating learning processes during the fieldwork. We outline below some theoretical aspects of these processes, under the sub-sections: *Social learning theory*; *Communicative vs strategic rationality*; *Key activities – discussion, interaction and reflection*; and *The place of visual techniques in this study*.

2.1. Social learning theory

We adopt the definition of Schusler et al. (2003:11) who view social learning ‘as learning that occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action’. Social learning is seen here as a process that occurs naturally, but which can also be encouraged and deepened through skilled facilitation (Leeuwis, 2004). In this project, we employed various visual techniques to help facilitate learning. The intention was for the process to continue among the participants after the fieldwork ended. This would result in the participants’ continued practice in reflexive thinking (learned in this project) about their own behaviour and perspectives, as well as those of others. Thus an important social learning paradigm adopted in framing this research was that peoples’ behaviours stem from their perspectives, which are developed from their interactions with their community, environment and experiences. As Groot and Maarleveld (2000:4) suggest, the type of active learning that occurs in collective processes such as social learning can lead to ‘... a deeper understanding about how complex issues work and why. It improves people’s capacity to make sense of and adapt to an ever-changing world’.

¹ The term ‘researcher’ is used interchangeably with ‘facilitator’ in this paper.

One theory that is used to help distinguish between different depths of learning is 'single, double and triple loop learning', which is derived from theories on organisational behaviour by [Argyris and Schon \(1978: 2\)](#). They maintain that learning involves varying degrees of the 'detection and correction of error'. Single loop learning occurs when learners modify errors by adapting habitual behaviour. Double loop learning is said to involve more creativity and critical thinking than single loop learning. It occurs when learners modify errors by questioning and analysing the 'governing variables' behind their underlying values, norms and behaviours. Triple loop learning, which is sometimes termed 'learning about learning' or 'higher level learning', occurs where approaches and techniques of learning are questioned and analysed. [King and Jiggins \(2002\)](#) claims that these various depths of learning are useful for different purposes in resource management projects.

2.2. Communicative vs strategic rationality – in facilitation of learning

Some authors imply that facilitators of goal-oriented projects tend towards 'strategic rationality' (from [Huber, 1998:95](#)), rather than follow the more idealistic principles of 'communicative rationality'. Others argue that there has been excessive dependence upon [Habermas \(1984\)](#) theory of 'communicative rationality' in previous literature on social learning ([Leeuwis, 1995](#); [Pijenburg, 2002](#)). Proponents of communicative rationality hold that people communicate best when they have equal power and are allowed opportunity to reach reasoned consensus on issues of disagreement. In contrast, in strategic rationality, people are thought to act strategically in their own self interest. Like [Leeuwis et al. \(2002\)](#) we argue that communicative actions can at the same time be strategic and the boundary between the terms can often be blurry: at times facilitator action needs to be strategic for effective and 'deep' learning to occur.

2.3. Key activities – discussion, interaction and reflection

The activities – 'discussion', 'interaction' and 'reflection' – were identified early in our experience of the community inquiry process, and from literature (e.g. [Keen et al., 2005](#); [Bessette, 2006](#)) as important in facilitating learning on NRM issues. The process at all research sites therefore involved using visual techniques to support these 'key activities', particularly during group work. The three activities are incorporated into an emergent model that we present in Section 6: 'Discussion'.

2.4. The place of visual techniques in this study

In this study visual techniques were utilised (and their effectiveness assessed) as supporting tools to enhance researcher and participant understanding of local context and participants' perspectives and preferences on NRM issues.

In this research we see visual techniques and images as 'mediums' for the development of new knowledge – not as 'neutral reflections of reality' ([Buckingham, 2009:635](#)) This new knowledge is constructed through a process of deliberation between researchers and participants – involving discussion, reflection and interaction.

3. Research sites and participants

3.1. Vietnam research site

Cat Tien National Park ('CTNP') is located in southern Vietnam about 150 km north of Ho Chi Minh City. Fieldwork was conducted

in the Park at two sub-sites on three field trips between 2008 and 2009. The larger project under which this study was conducted in Vietnam was focused around options for NRM, and more specifically on understanding the potential for implementing Payments for Environmental Services ([Petheram and Campbell, 2010](#)).

Fieldwork entailed individual interviews and workshops in which visual techniques were used to promote discussion, interaction and reflection in a community inquiry process. Forty-one participants were Indigenous (and eighteen non-Indigenous people) living in and around the Park. Initially, views were sought on a wide range of issues, and subsequently attention was focused on people's preferences in the event of a PES scheme being introduced.

3.2. Australian research site

The Gove Peninsula lies on the east coast of Arnhem land, northern Australia. Fieldwork was conducted over five visits between 2008–2010 to the Dhimurru Indigenous Protected Area, working primarily with participants from two communities. Research entailed interviews and three workshops with a total of nine Indigenous Rangers, and interviews and two workshops with a total of twelve Indigenous women from the two communities. Views were sought on a wide range of issues, including changes in participants' landscape, as well as views on climate change, and preferences for community adaptation ([Petheram et al., 2010](#)). Questionnaires and visual choice modelling experiments were also administered in a related study ([Zander, unpublished](#)).

4. Research approach

Visual techniques were used during the interviews and workshops with community participants at the research sites in Vietnam and Australia. The selection of techniques was made by researcher/s but influenced by participant's needs and preferences. The following sub-sections describe the techniques used and the way their strengths and weaknesses were assessed.

4.1. Visual techniques used

The literature provides information on a suite of visual techniques from visual sociology, anthropology, community development, health and NRM practice. The techniques selected for this study were used in a variety of ways at the sites in the two regions, to allow exploration of their efficacy in remote, but widely differing situations.

It is important to emphasise that the visual techniques were used in conjunction with more standard verbal research techniques (in-depth interviews and workshops) to deliberately enhance discussion, interaction and reflection on NRM topics. Translators were usually employed, except in the case of some Australian participants who had good proficiency in English. The main visual techniques and the way they were used at the two sites are summarised in [Table 1](#).

4.2. Applying the visual techniques

Some techniques were used more frequently than others, and the combinations varied at each site. The choice of techniques depended on the purpose, context, timelines and participant preferences. Practical considerations were often important. For example, during inclement weather it was difficult to take photos or video outdoors – so more diagramming was used, or greater emphasis placed on verbal communication. Time for participation in workshops was often restricted by participants' commitments,

Table 1
Summary of visual techniques and their use in Vietnam and northern Australia. Note: Darker shading denotes more frequent use of the technique than lighter shading (blank boxes indicate no use of the technique).

Visual technique	Description	Vietnam	Australia
Visual elicitation: display of photographs or video on camera, laptop or screen (e.g., Banks, 2001)	Photos/video collected by researcher (or taken by participants) were used to explain or demonstrate a concept; or to elicit feedback about particular landscapes/practices, or to generate discussion about a particular topic. Used in interviews and workshops		
Hypermedia DVD including photos, video clips, photos and text	Created with participant input to help summarise collective ideas and opinions. Also useful for communicating results to other stakeholders, verifying participant perspectives and building rapport among participants. Used in interviews and workshops		
Participant generated photography or video clips (e.g., Frohman, 2005)	Participants were given a still or video camera and asked to take images of features of their landscape (that have positive or negative implications to them) and to explain these. Some photos and video were used later in interviews and workshops.		
Video statements: clips of participants talking about issues	Used to summarise participant views, seek feedback and/or verify perspectives on particular topic, e.g., re-occurring themes, controversial opinions, workshop synthesis etc. Used in interviews and workshops (video taken by participants and/or researchers).		
Rich picture diagramming (RPD) (e.g., Chambers, 2001)	Participants drew on sheets of paper, features of their landscape that are important to them (positive or negative). Also used to build future scenarios. Used in interviews and workshops		
Visual summaries: short video/photo presentations on issues and topics	Created (1) by researcher to help communicate research topics and (2) by researcher with input from participants to summarise collective ideas and opinions. Used for verifying perspectives, generating discussion, building rapport among participants – in interviews and workshops		
Historical analysis (Chambers, 1997)	Timelines were drawn with participants, with pictures (and words) representing different historical events		
SWOT analysis (Chambers, 1997)	Strengths, weaknesses, opportunities, threats were drawn with participants		
Matrix ranking exercises (Chambers, 1997)	Participants visually ranked NRM options with pebbles or pen marks		
Participatory sculpting (Fig. 2)	Participants sculpted play doh in an extension of RPD (to modify aspects of diagrams, or add other elements to diagrams). Used only in workshops		
Seasonal calendar analysis (Chambers, 1997)	Participants drew elements from their traditional seasonal calendar and described recent changes to the calendar.		
Visual choice modelling (Reported in Zander (unpublished))	Computer drawn images were used to elicit responses from participants about preferences for future scenarios and general discussion. Used in interviews and workshops.		

such as child-rearing, farming, community activities, work, and ceremonies. Over the course of the community inquiry, greater insight into the effectiveness of different techniques for different purposes was gained, and the types and application of techniques were modified.

Although the conditions and (NRM) topics of interest varied across the field sites and sub-sites, three main stages emerged as important in the use of visual techniques. These stages became incorporated into the inquiry process at each site, using the visual techniques as outlined below:

- Stage 1. In-depth interviews and workshop/s were conducted on general aspects of people's livelihoods and landscape. Here we used one of (or a combination of): rich picture diagramming (RPD); participant generated photography (PGP), participatory sculpting; historical analysis (Vietnam only); SWOT analysis (Vietnam only); and visual elicitation – to engage and interest participants, and to explore people's general perspectives.
- Stage 2. In later workshops and interviews – we used RPD; PGP; visual elicitation; seasonal calendar analysis (Australia

only); visual choice modelling (Australia only); video statement (recording) and hypermedia DVDs for generating discussion on specific NRM topics.

- Stage 3. In interviews and workshops – we used video statements and summaries; hypermedia DVD creation; and matrix ranking exercises – to negotiate issues, and develop 'collective perspectives' relating to the specific NRM topics.

Some activities during the fieldwork required a greater degree of interaction with community participants than others. And the level of participation depended on their desire to become involved, time constraints, resources available and other factors. Thus, photographs or video footage were sometimes collected from secondary sources, or 'taken' by the researcher, or sometimes by participants. Editing of video was mostly done by the researcher. The results of editing were shown (as video clips) to individuals and community, to allow feedback, reflection, verification and re-editing or deletion. It was useful at later stages of the inquiry process for community members to consider together the type of visual products (and the messages) that they would like to

communicate to other stakeholders, and especially to government agencies.

4.2.1. Clarifying the uses of video

At the end of interviews, participants were sometimes asked if they wanted to talk on video about a prominent theme or issue arising, or to summarise a common view or argument for other community members. Such statements were captured by video camera, or a webcam on a laptop computer. After obtaining consent, these clips were later placed on VCD² or DVD – to allow participants to review the main themes arising from the research, and to replay for participants in later interviews or workshops for further discussion and reflection. Similarly in workshops, before conclusion the participants were recorded where they wished to do so, summarising the main collective perspectives that arose from discussions. These recordings were compiled on VCD or DVD, and then replayed to participants for further discussion and reflection. Later in the research, participants recorded video clip messages specifically for other (e.g. policy) audiences, based on themes that arose from interviews and workshops. The video clips and other visual images (e.g. photographs, and images of rich diagrams, sculptures, music and video summaries derived from the community inquiry) were incorporated into interactive, hypermedia DVDs. These DVDs were created with input from (and verification) by participants for the purpose of communicating local messages to other stakeholders.

4.3. Assessing the visual techniques

The research process in the overall study involved continuous gathering and analysis of data on the use and effectiveness of the visual techniques, as well as on peoples perceptions of the NRM topics. This paper is concerned with the first set of data – i.e. on the use and value of visual techniques in supporting learning. Results of analysis of data on NRM topics has been reported by Petheram and Campbell (2010) and Petheram et al. (2010). Visual techniques were used in a range of situations, so as to allow general assessment of their strengths and weaknesses in facilitating different aspects of learning. This assessment was carried out by two means: (1) researcher observations of practicality and participant reactions to techniques, and (2) feedback from participants and research partners during interviews and workshops – on the effectiveness of techniques. Researchers kept notes on the usefulness and difficulties experienced while using each visual technique in the field, and participants' opinions of the usefulness of each technique were sought and recorded during field activities. The assessment could not rely entirely on participants' opinions of the techniques, as all visual techniques were new to them and they had no basis for comparing visual techniques with other techniques. No pre-set criteria were used in assessing techniques; rather, the data and analysis were used to seek features that arose as important in using, selecting or rejecting techniques for various circumstances.

4.4. Data analysis

In our study we drew from grounded theory, where theory is seen as emergent from data grounded from the field (Glaser, 1992). Analysis of data (i.e. 'words' derived from notes on researcher observations and on participant responses) involved 'substantive and 'theoretical' coding (Fernandez, 2004). Substantive coding led

to the identification of main themes and categories, and also became the basis for development of theories and frameworks through theoretical coding. During coding we used the constant comparison method, i.e. constantly comparing emergent, new information with previously identified information (Carpenter Rinaldi, 1995). This was designed to identify categories, relationships between and within categories, as well as core categories (Glaser, 1992).

5. Results

The results are outlined under subheadings relating to five main themes that arose from analysis of data on the visual techniques, i.e. 'Features important in facilitating learning'; 'Effectiveness of visual techniques'; 'Use of visual techniques in group versus individual settings'; 'Visual techniques to encourage 'unrestrained' thinking'; and 'Conceptualisation in social learning'.

5.1. Features important in facilitating learning

From the data gathered in the process of discourse with individuals and groups, we identified three main features as important generally in facilitation of learning in inquiry with communities on NRM topics. The first of these, 'Engaging and Scoping', relates to establishing preconditions necessary for creating an appropriate and comfortable space and frame for participants to be inspired, confident, positive and willing to work together with the facilitator in learning. It also entails the initial encouragement of 'active listening' (Engel and Korf, 2005) and 'unrestrained' thinking (Schusler et al., 2003:317) by participants and researchers in the general context and broad perspectives and values held by participants. The second, 'Focussing on specific NRM topics', relates to the encouragement of deep reflection on specific NRM topics, and relationships to background perspectives and values. And the third feature, 'Negotiating and Communicating', relates to the development of a collective vision and perspective (which could be communicated to other stakeholders). These three features can be further broken down into a total of seven components, as summarised in Table 2.

The seven components from Table 2 were identified from early field research and literature review, and were utilised later in this study as criteria in assessing the properties and effectiveness of the visual techniques used. The identification of these criteria and their later use to assess the visual methods is consistent with an action research approach whereby emergent data helps guide later research processes.

5.2. Effectiveness of visual techniques

At later stages of the research, the effectiveness of the visual techniques was assessed over their continuous use in the two countries, on the basis of the researcher observations and participant comments, using the features (and their components) described in Table 2, as general assessment criteria. Results are summarised in Appendix A and described in greater detail in Results and Discussion. Flexibility in choice of techniques arose as a vital feature of the research process. Different techniques were found to be useful for different parts of the study, and for different purposes and stages of learning at research sites.

Overall, rich picture diagramming, video statements and hypermedia DVDs were the most effective and versatile techniques, and were therefore used most frequently. Experiences using the techniques were similar across the field sites within each country. However, some techniques were more effective than

² Video Compact Disc. (In Vietnam one of the village's main hall, and a few individuals had VCD players, but none had DVD players).

Table 2
Important features (and their components) in facilitating learning in community inquiry.

Feature number	Main features important in facilitation of learning, and their components
1	Engaging and scoping <ol style="list-style-type: none"> Enhancing researcher engagement (e.g., building rapport, engaging participants in dialogue). Strengthening community spirit, and capacity building (e.g., confidence building, empowerment). Improving researcher/facilitator and participant understanding of general local issues.
2	Focussing on specific (NRM) topics <ol style="list-style-type: none"> Facilitating group learning to focus on the specific NRM topics – through participatory activities and providing feedback.
3	Negotiating and communicating <ol style="list-style-type: none"> Enhancing communication with and in community, and with other stakeholders (e.g., breaking down barriers between different ethnic groups, status levels). Helping develop a collective community perspective. Providing an avenue to communicate to other stakeholders.

others in each country. For example RPD was more effective in Australia than Vietnam (where less educated women did not have familiarity with pencils/pens), but video statements were more effective in Vietnam (where video was more of an engaging novelty than in Australia).

RPD appeared to be the most versatile technique, for a range of purposes – from helping to engage participants to encouraging deep thinking. Video was particularly valuable when encouraging discussion on specific NRM topics during the facilitation of learning. Techniques like SWOT, historical, seasonal calendar and visual analysis and choice modelling were useful only for specific purposes. We expand on the results in the following sections.

5.2.1. Participant responses and views on visual techniques

All participants indicated that visual techniques had been useful and had added value and enjoyment to the inquiry process, although some people were more enthusiastic than others. A few participants were initially hesitant to be captured on video or on still camera, or were anxious about damaging the equipment while entrusted with its use.

Participants indicated that they particularly appreciated watching video clips, as part of the inquiry process. In northern Australia, where people were quite accustomed to sketching and drawing, participants particularly enjoyed RPD. Some participants stated that this process was relaxing, and 'helped us get to know you [the researcher/s] better too'. All participants responded that they would like to be involved in the use of visual techniques if they were involved in future research/projects. Northern Australian participants – particularly male rangers who had experience of using video – indicated they would like greater involvement in filming and video production in the future. They were enthusiastic about the idea of being able to create visual products (e.g., short videos) and sharing these with other stakeholders, and they had ideas about presenting video (on climate change issues) at an Indigenous festival, to others in their community and to children at schools. After a workshop in northern Australia a participant said: 'Listening and seeing each other in this way is important. When we learn to think in these ways we can understand these better and then also explain to others'. Many participants in both Vietnam and Australia were enthusiastic about video as a medium for expressing their views to other stakeholders (especially those not normally accessible to them). Some participants in Vietnam suggested their video statements should go on National television to reach the wider community, which may influence policy makers.

Several participants in Vietnam who held positions of authority (informal and formal) were very enthusiastic about using the VCDs and video statements during village meetings, to further generate discussion and refine development of ideas among the local resident population and to continue refining their perspectives, with a view to communicating these to National Park management and government officials. This demonstrates the way that some participants naturally adopted the visual projects (especially at the Vietnam site) for future self reflection, information sharing and advocacy.

5.3. Use of visual techniques in group versus individual settings

Participants in both countries clearly enjoyed using visual techniques in workshop settings, more than on a one to one basis. After a workshop involving visual techniques in Vietnam, a participant said: 'I have been in other workshops with researchers and I am always bored. But this was really fun and interesting, and I really liked watching video of us talking. It helped us talk to each other more'.

In such group contexts, where people had opportunity to interact and reflect with others, the visual techniques allowed facilitators to promote deeper thinking on NRM issues (i.e. questioning underlying behaviour and perspectives), and thus we assume social learning, than in individual interviews. However, in-depth (oral) interviews played other important roles – in providing background information, empowering people to voice their opinions, and exposing and negotiating sensitive issues. Some visual techniques, such as PGP and RPD, were quite effective in individual in-depth interviews, as a means of encouraging 'unrestrained' reflection and expression, and from a different perspective from which they were familiar. However, some people (particularly women and participants with less formal education in Vietnam) were too shy and reticent to be involved in RPD during in-depth interviews, but were more willing to be involved working with groups during workshops.

5.4. Visual techniques to encourage 'unrestrained' thinking

When rich picture diagrams ('RPDs') and participant generated photography ('PGP') were utilised to seek understandings of peoples' perspectives, most participants revealed their views on their natural surroundings first and foremost (see Fig. 1). In some cases, religious or spiritual views were also expressed through these exercises – topics that were seldom mentioned during only verbal interviews. For example, images of a specific hill, island, tree, or other places with strong spiritual or cultural significance, were often depicted in diagrams or photos. It seemed that visual exercises provided a better means to communicate deeper, intrinsic and tacit values than verbal interviews and conversation alone would normally permit. Visual techniques often made it easier for people to 'see in a different way', and also express (abstract) topics that they found difficult expressing verbally (e.g., due to political, cultural or religious taboos in Vietnam). In the northern Australian sites many participants – particularly women – commonly used metaphors to express their perspectives. It seemed that images often tended to take the place of metaphoric speech – especially when dealing with topics that traditionally could not be stated directly or easily. For example, a participant may be uncomfortable talking of religious or spiritual concepts, but would (in preference) photograph scenes of cultural, natural or spiritual significance (see Fig. 1). The RPD, PGP and participatory sculpting (see Fig. 2) were particularly helpful in providing a way to allow people to express and explain these metaphors.

While some of the techniques were useful for promoting open expression about spiritual and natural values, on some occasions



Fig. 1. A man in Vietnam who expressed no interest in forest (or nature) during an in-depth verbal interview, chose photos only of vegetation when later involved in participant generated photography. The images were plants with cultural significance to him and his family. This photograph is in front of a reforested area that he often visits 'because it is peaceful'.

video media limited the discussion of controversial topics (e.g. corruption of regional leaders or government officials). Where participants were willing to talk on video on such issues, researchers needed to exercise caution in deciding whether to show these images to other stakeholders.³ However, in most cases participants were very willing to allow use of descriptions, diagrams and photos about these topics. This suggests that in certain situations, other techniques can be less intimidating (or less politically risky) than direct video recording (of participant opinion). After several video recordings, some participants became less hesitant about expressing views on controversial topics on video, and even appeared to gain satisfaction from placing their views on record. As one female participant in Australia said 'we need other people to know about these issues, they are important and we need to talk about them'.

5.5. Combinations of techniques

In some cases, it was helpful to combine the use of certain techniques. For example, participatory sculpting and diagramming were very compatible when used together. Women participants in Australia found that if they drew diagrams, they could add extra dynamic features (e.g. changes or actions) to their own or other participants diagrams by using the play doh (see Fig. 3.4). The play doh (representing the features) could easily be modified by participants during discussions.

Photos, video and hypermedia DVDs were also very valuable in recording diagrams, sculptures, seasonal calendars, timelines, matrices, music and so on. These records could be used later during the inquiry process, such as for use in enhancing recall among researcher/s and participants, providing feedback for discussion and in communicating local perspectives to policy arenas (Petheram et al., in press). Hypermedia DVDs were particularly helpful in providing an organising structure to store, and present these images, as well as supporting text.

³ Consent was always sought from participants for photography and video recording, and also for later use of the images. Footage was always shown to participants, and images deleted on request.



Fig. 2. A woman in northern Australia using diagramming and sculpting to explain her view that 'Government [represented by elongated green play doh] should come to the 'root' level to meet and discuss [climate change adaptation issues] with the community [yellow play doh circles]' – to enable future cooperation. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

5.6. Conceptualisation in social learning

From the data gathered across various sites and communities, we concluded that participants were involved in three main types of conceptualisation during learning processes. We termed these: 'open conceptualisation', 'specific conceptualisation' and 'synthesis of thinking'. It seems important that facilitators of learning processes understand these types of conceptualisation, and ways in which each might be aided or enhanced. On deeper analysis, we found that these types of conceptualisation corresponded closely with the three main features that were identified early in the research as important in facilitating learning (in Table 2).

During the first stage – open conceptualisation – participants were engaged through a general exploration of their environment and sharing of ideas. Then (in specific conceptualisation) the process became focused on facilitating learning about specific concepts of interest in NRM – such as PES. The third stage of conceptualisation involved deep reflection and negotiating, as participants worked towards a synthesis of thinking about the particular NRM issue/s.

Our observations indicate that the strengths of visual techniques in promoting the different features important in learning (Appendix A) can also act to enhance the corresponding types of conceptualisation. Our findings are outlined below on visual techniques useful in promoting each stage of conceptualisation, together with further explanation of the three types. This information can be useful for practitioners applying visual techniques for the facilitation of learning in NRM.

5.6.1. Techniques for open conceptualisation

Before broaching discussion on specific topic areas in NRM, it was found to be essential for the researchers and participants to share their general aims and perspectives in a broad and open manner. Such exploration needed to occur in unrestrained and non routine ways, so as to encourage open and free thinking – without being too influenced by narrow project topics. This 'open conceptualisation' also helped in building trust, confidence and positive thinking, and allowed strong engagement between researcher and participants later. All these steps emerged as vital prerequisites in facilitating deeper stages of learning.

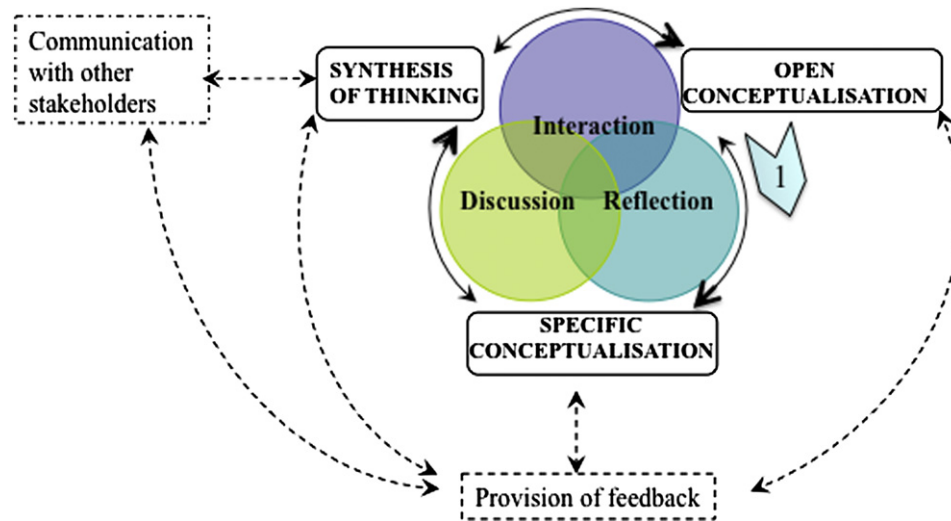


Fig. 3. Model of key components (conceptualisation and activities) in facilitating deliberation for learning processes in NRM.

RPD and PGP were particularly valuable techniques for providing participants with an 'open' and lateral way to conceptualise and express features in their landscape that had important (positive or negative) influence on their lives (see Appendix A). Such visual expression was useful in revealing values and preferences in a broad and creative way. Hence these two techniques were particularly valuable in providing general insight into the importance placed on different components of the landscape and they often helped in understanding the physical and emotional connections many participants had with nature.

Diagramming (RPD) was generally more versatile in allowing participants greater flexibility (than PGP) to include views on broader aspects that were not immediately visible in the landscape (e.g., features that are distant, or that existed in the past, or may occur in the future). People could sketch objects or even symbols of abstract concepts – that could not be photographed.

5.6.2. Techniques for specific conceptualisation

After discussing broad topics, it was often helpful for the researcher to share knowledge of their area as well as encourage participants to conceptualise and discuss their views on very specific topics (e.g., climate change), and on values, norms and behaviours underlying their perspectives. For the researcher, having tools on hand that provided feedback or could present scenarios, helped to encourage participants to focus attention on specific topics (i.e. in 'specific conceptualisation').

RPD proved especially useful and versatile in exploring specific topics. Participants could be asked to draw images of aspects they would like (or not like) to see in their landscape in the future, or to depict scenes that may occur under different scenarios (i.e. a form of visioning or scenario building) and to discuss reasons for these preferences and views.

Other visual techniques were also useful in 'focussing attention' on particular topics. For example, photo elicitation allowed participants to respond to an image of particular scenes in the landscape (e.g. a degraded beach, an agricultural plot, children not in school) and discuss underlying reasons for their responses and opinions. The same image could be used to seek responses from a range of people at different locations and times. Information derived from the open conceptualisation stage could be useful to help guide this more specific conceptualisation.

Visual elicitation, particularly of participants talking about specific topics or issues (visual statements recorded from interviews

or workshops) helped to encourage dialogue and hence elicit responses from other participants on the same topic. Such techniques were useful in understanding differences in participants beliefs on a particular topic, and expanding on particular topics, as well as in knowledge sharing (e.g., between different ethnic groups). Thus they provided a basis for 'social learning activity' – through participants reflecting and reframing views on particular issues, refining their ideas and expressing underlying values and reasons for their behaviours and beliefs. Video of village or forest scenes were engaging to participants, but not usually very helpful in generating specific discussion and eliciting response. Some participants commented that moving images are too fast to focus specifically on some of these scenes. Thus, shorter clips (and photos) were better than long scenes. However, video clips of people taking part in specific work or other activity (e.g., agricultural practices) was very helpful in stimulating dialogue on specific topics. The video statements and hypermedia DVDs were found to be valuable for focussing attention on particular topics – and particularly for verifying the researchers' perceptions of the village situation, and of participants' perspectives.

5.6.3. Techniques for synthesis of thinking

In promoting collective thinking, it was necessary for researchers and participants to summarise and synthesise the different perspectives within a group. This 'synthesis of thinking' occurred best after 'open' and 'specific' conceptualisation.

All the visual techniques provided (through their 'products') a record of deliberation processes and knowledge sharing at the research sites – although some were more valuable than others in this respect. Video footage of participants talking about particular topics was especially useful for the purpose of recapping on different views, and was a valuable component in discourse at later stages, especially in developing hypermedia DVDs. The co-development of such DVDs required concerted effort by researcher and local people, to reach mutual understandings on perceptions of particular topics. Production (and showing) of these DVDs was helpful for encouraging participants to synthesise and summarise group understandings and opinions, and for refining ideas that they wanted to communicate to others. It became apparent that information derived from the 'open' and 'specific conceptualisation' stages were very important in guiding the 'synthesis of thinking'.

'Synthesis of thinking' involves a slow conceptualisation process and needs continued revisiting, and we found that 'lack of time'

seriously limited this important stage. We found that facilitators were not necessarily needed for revisiting and completion of this (synthesis) stage – if community members had become adequately engaged and had access to resources. As mentioned earlier, some of the participants were keen to use the visual products derived from earlier processes, during later village meetings, to further discuss and refine perspectives and visions for the future. However, for the communication of these perspectives to other stakeholders, researchers will commonly be needed initially to act as intermediaries (or ‘boundary agents’; Merali, 2002) through delivering community messages to other non-community groups (and from other groups back to communities).

5.7. Limitations of the study and visual techniques

Various limitations and requirements influenced the effectiveness of visual techniques. These were mainly associated with constraints of time and resource availability, and the relative difficulty of use of some techniques, and the need for trusting relationships and hence for long-term project duration.

The creation of video and DVDs was the most time (and resource) consuming activity associated with the techniques used. The more participatory, digital techniques (e.g. participant generated video) were usually more difficult to use than simpler, iterative ones (e.g., RPD), because participants were invariably busy with their farming and other livelihood activities. Few people had time to be heavily involved in (highly participatory) video production, and research funding was not adequate to pay participants for their time lost from work or other commitments. The considerable time spent editing and subtitling video clips reduced the time available for other aspects of fieldwork. Time could have been more effectively spent on research if an information technology (IT) or video technician had been available to manage editing and technical issues. Also, sometimes use of the more technology dependent techniques (e.g., video and DVDs) were limited by lack of access to electricity in the remote locations. The software available for editing video and producing DVDs can also markedly affect the time required.

It became very clear early in the fieldwork that strong and trusting relationships between the participants and the facilitator (as well as the translators, and assistants) were crucial to ensuring a sound engagement process. Visual techniques were valuable in building these relationships, but the translator and facilitator’s language skills, and engagement and facilitation skills – all had an impact on the effectiveness in promoting learning. Other requirements in facilitation were proficiency with visual techniques, sensitivity in selecting techniques and appropriate images, timing, and care in the way techniques were introduced in different cultural settings. It was difficult to account for all these variables, but special effort was made to consider these factors when assessing the effectiveness of particular techniques.

A difficulty noted in working with some of the visual techniques was that their use sometimes gave rise to subtle power differences, which could affect learning and communication processes. For instance, if certain techniques were introduced inappropriately in these remote communities, this could raise the ‘perceived authority’ of the researcher (or certain other participants) and thereby disempower some participants and cause barriers to learning. For example, this can occur where a video camera is used for immediate recording of participants, without proper levels of engagement and trust being built between researcher and participants prior to recording. In other cases, for example where strong engagement was built, the power balance seemed to shift in the opposite direction, that is participants felt they were the ‘experts’ – in explaining aspects and interpretations of local images. This finding further highlights the need for practitioners to employ

sensitivity and critical awareness in using these techniques in working in remote cross cultural situations.

By the end of the 2 year contact with the village sites, quite strong connections with communities had developed and useful medium term results had emerged. For the study of long-term influences of using these visual techniques on NRM planning and community livelihoods, a more prolonged period of fieldwork would be required.

In working with visual techniques, facilitators need to be highly mindful of ethical ramifications of the use of visual techniques, especially video – where peoples’ statements can easily be taken out of context. Protocols need to be developed to clarify ways and circumstances in which images are to be used in a project. For example, in some parts of Australia recordings of individuals who later become deceased cannot then be used in photographic or video images (or at least a warning needs to be given to other Indigenous potential viewers). In the Vietnam field site, it was important to be cautious about showing controversial statements made by villagers to certain officials, without the permission of respondents.

Commonly in NRM, there is a need to access local perspectives in instrumental ways and often on very specific topics that are not of high concern to local participants. We felt that this study was often compromised by the limitations and goals of the larger projects within which we were working. Without these limitations, the project could have been more participatory and open, rather than confined to seeking views on specific NRM topics.

6. Discussion: the potential for visual techniques

The wide variation we found in the effectiveness of particular visual techniques for different purposes and in different contexts highlighted the need for flexibility in adapting visual tools to suit the situation and resources available. Although the primary researcher came to the project with sound skills in use of visual techniques and some group facilitation experience, considerable resourcefulness was needed at each new research site and cultural setting, to enable the potential of visual techniques to be harnessed.

One of the clear strengths of incorporating visual techniques into interviews and workshops was the way these encouraged participants to reflect and discuss in a less ‘restrained’ and ‘different’ way, than did verbal techniques alone. Visual tools and activities provided means for participants (including researchers) to conceptualise topics and issues in ways different to those familiar to them. The use of visual images often enabled people to remove themselves slightly from their reality, and hence to see the larger ‘picture’, or another perspective. This was particularly apparent in PGP, RPD, and video work. As explained by Van der Riet (2008:555), discussion around a visually created artefact is ‘less confrontational than direct questioning because it is the diagram or map, rather than the individual person which is “interviewed”’.

The employment of visual techniques such as PGP and RPD as means for participants to express themselves in a ‘different’ manner, was useful in various ways. Firstly, it brought out perspectives that may not otherwise have been seen. Secondly visual expression had clear benefits for the researcher working in a cross cultural context and foreign language. Sometimes the techniques allowed participants to express views (visually), where verbal expression was taboo or threatening (e.g., topics on religion, spiritual values, politics). This was more apparent in Vietnam than in northern Australia. Additionally people whose voices are not commonly heard, had the opportunity to express their views in other ways.

Video and some other techniques aided in the research (and development) process, by providing a record (or 'reliable memory') of discussions and learning (see Appendix A). Such records can be very valuable for later promotion of discussion and reflection, and hence in generating feedback locally and externally. As Kitchener (1983) maintains, visual activities and processes allow participants to evaluate and monitor activities, and to check the suitability of various actions or solutions to issues. Additionally, visual records are very useful to researchers in allowing verification of their own perceptions of people's views and the results of research. These visual records can also play an important role in communicating local perspectives to other stakeholders in a way that can be emotive, real and impactful. The potential benefits and limitations of visual 'products' for this purpose are elaborated in greater detail in Petheram et al. (in press).

Although most of the visual techniques were most effective when used in group contexts, it is important to stress that individual interviews played an integral role in deliberation processes. On some occasions participants did not want to argue about sensitive topics (in workshops), so tended to accept the wider group's opinions. Janis (1982) refers to the concept of 'groupthink', where deep and rich thinking by individuals can be lost in group situations. Individual interviews provided a valuable way for facilitator/s to deal with such topics. However, visual techniques, such as the showing of video summaries and statements to individual participants (or smaller groups), were at times useful for broaching contentious topic areas. In some instances, participants felt more comfortable recording their perspectives on video, away from group pressure.

6.1. A model for facilitating learning in NRM

Our analysis of data (and literature) led to the emergence of a simple model – to illustrate the types of conceptualisation and activities important in facilitation of learning for NRM project processes. Fig. 3 shows the three types of thinking that can be encouraged among participants – arranged around the perimeter of three overlapping circles. These three inner circles represent a learning cycle, composed of the activities important for the functioning of the learning process – interaction, discussion and reflection. For effective learning to occur, the process needs to involve all three activities, and participants also need to pass through the three types of conceptualisation – indicated by the ring of arrows. The model is intended to provide a guide for facilitators working within a specific project goal, as is often the case in NRM (e.g., seeking to incorporate Indigenous perspectives into climate change adaptation policy). The process should start from the number one arrow shown at the 'open conceptualisation' stage and move towards the 'specific thinking stage'.

Feedback is an essential part of all stages of the cycles in Fig. 3, and particularly for 'specific conceptualisation' and 'synthesis of thinking'. Visual products derived from the 'open conceptualisation' stage can be useful in guiding feedback for 'specific conceptualisation' and 'synthesis of thinking' – to draw participants' attention to certain topics or themes. For example, photographs – derived from PGP – that represent particular themes (to participants) – can be shown to participants at the 'specific conceptualisation' stage, to focus attention on a particular issue, and also to gain responses from other participants on that topic. The visual feedback can be used in a variety of ways, and can lead towards clearer reflection of underlying values and beliefs and thus 'deeper levels' of learning; that is double and/or triple loop learning (described in Section 2.1). This process is in line with the claims of Leeuwis et al. (2002:459) that '*developing and organising*

feedback in visual forms can serve a range of purposes in social learning processes'.

'Synthesis of thinking' is conceptualisation that is needed by a group working towards developing collective thinking on an issue – often with a view to communicating messages to other stakeholders. Stakeholder responses (to these messages) can also be taken back to communities/groups in the form of feedback (e.g., video summaries) to open up communication channels. It is important to keep in mind that this 'synthesis of thinking' is not static and is always changing. Additionally, as Röling (2002) suggests, it must be recognised that actors may be able to collaborate to reach 'collective cognition', and their perspectives may overlap, but these are not shared completely and differences will remain.

In using the model in Fig. 3, the stages in the outer cycle can be revisited in any order – but 'open conceptualisation' should always occur first, and more 'specific conceptualisation' later. It is also important to note that conflict and debate can play an important positive role in any of these stages if handled well. As Leeuwis (2000) emphasises, facilitators can strategically attempt to negotiate conflicts and sensitive issues among certain participants to reach beneficial and sustainable agreements.

The distinction between strategic and communicative rationality (see Section 2.2) will not always be clear in learning processes. Like Groot and Maarleveld (2000) we believe these types of rationality can be highly intertwined and often complementary. We realised during this study that although our overall research intent was 'communicative rationality', elements of 'strategic rationality' played a role, especially during initial specific conceptualisation and synthesis of thinking, when directed interaction can assist the process.

6.2. Indirect benefits of visual techniques for research

Our work with visual techniques revealed some unexpected features of both the techniques and the visual products. For example they provided invaluable means of recording and storing information from field sites, and also irreplaceable records of raw data that can be referred to at any future time. Photographic and video images were regularly used to refresh memories of participants' names and faces, language and places, and plants and practices relating to NRM. Video was particularly useful in allowing researcher/s to act reflexively, and to record verbal and visual field diaries of their ideas and observations of the day. These records often comprised part of the data analysed and were also used at later stages to verify recollections and interpretations, and to recall and understand possible researcher bias, and the evolution of ideas and theory.

7. Conclusions

Our study provided new insights into the effectiveness, complementarity and use of visual techniques in enhancing learning – in inquiry among remote Indigenous people on issues in the planning of local NRM. Visual techniques had strengths in engaging participants; encouraging unrestrained and lateral thinking; allowing opportunities for self-expression and reflection; and exposing the perspectives of other community members. We advise these techniques are best used with verbal approaches, and with awareness and reflexivity. In general, the techniques were valuable in helping to facilitate learning, although techniques varied in their utility for different purposes and in different cultural and physical circumstances.

Key requirements for facilitators using these tools are flexibility, openness and resourcefulness. As mentioned by Pauwels (2004:

50), practitioners utilising participatory visual techniques such as video (whether researchers, or separate facilitators), often need to play a 'steering key role' in directing the process. This may be in contrast to other situations where outsider facilitators play less of an active role. Visual techniques can be invaluable to facilitators here, in helping participants focus on stages of learning and specific topics, and to provide activities that encourage deeper reflection and development of collective thinking. Such guidance needs to be done with sensitivity, reflexivity and awareness, and in a way that is inclusive of local people, their perspectives and their needs for sustainability. The model (Fig. 3) was developed to strengthen awareness in facilitators of these requirements, and to emphasise the need to be cognisant of three important types of conceptualisation when using these techniques.

We found visual techniques useful in a wide range of development situations in remote regions. While modern IT-based equipment can be very powerful, we were able to adapt and use quite

simple techniques (such as rich picture diagramming) valuably in the widest range of applications. It was found that modern video and photo techniques can be learned relatively easily today, but that they can have limitations in remote areas. Apart from their other benefits, video, diagrams, photo and other images were very valuable as a record of all research activities, and these media were a strong benefit in data collection and analysis in remote field locations.

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Appendix A

Summary of relative effectiveness of main visual techniques in enhancing learning and communication^a.

	RPD	Photo elicitation	PGP	Video statements	Video/photo summaries	Hypermedia DVD
1) Engaging and scoping						
a) <i>Enhancing researcher engagement</i>						
Help build rapport & trust	vAA	va	VVAA	va	VVa	VVAA
Help break language and cultural barriers	vAA	va	VVa	VVa	VVa	VVAA
Help communicate research & concepts	–	VVAA	–	–	va	va
Engage & interest participants	vAA	va	va	VVAA	VVAA	VVAA
Allow a way to study with participants	vAA	va	VVAA	VVa	va	vAA
b) <i>Strengthening community spirit and capacity building</i>						
Foster optimism about community and future	va	va	–	va	VVa	va
Build confidence & empowerment	vAA	–	VVAA	VVAA	va	VVAA
Provide exposure and skills in technology	–	–	va	VVa	va	VVAA
c) <i>Improving researcher and participant understanding of local issues</i>						
Elicit responses and discussion	vAA	VVAA	VVAA	VVa	VVa	VVAA
Provide insight into underlying core values	VVAA	va	VVAA	va	–	va
Encourage open & different thinking of issues	VVAA	va	VVAA	–	va	va
Provide insight into participant interactions, power differentials, representation	VVAA	va	va	VVAA	VVAA	va
2) Focussing on specific nrm topics						
d) <i>Facilitating group learning cycle (enhancing feedback, discussion, interaction and reflection)</i>						
Encourage discussion	vAA	VVa	va	VVAA	VVa	VVAA
Encourage interaction	vAA	va	va	VVa	va	va
Encourage reflection	vAA	VVa	VVAA	VVAA	VVa	VVAA
Encourage discussion/reflection on underlying values/norms/behaviours	VVAA	VA	VVAA	VVAA	VA	VA
Provide voice to those often unrepresented	vAA	–	VVAA	VVAA	VA	VA
Focus attention on topic areas	VVAA	VVAA	–	VVa	VA	VVAA
Provide memory of social learning process	vAA	–	va	VVa	VA	VVAA
Provide stimulus or feedback	vAA	va	vAA	VVAA	VVAA	VVAA
Promote visualisation of scenarios	VVAA	va	–	–	–	–
Verify interpretation of data (by researcher)	–	va	–	VVa	VVAA	VVAA
3) Negotiating and collaborating (for communication)						
e) <i>Enhancing communication between community/other stakeholders</i>						
Communicate perspectives within community	vAA	VA	VA	VVAA	va	VVAA
Communicate perspectives to non-community	vAA	–	VA	VVAA	va	VVAA
f) <i>Helping to develop a collective perspective</i>						
Allow deep and critical thinking and visioning together	vAA	–	–	va	va	VVAA
Summarise & revise collective perspectives	va	–	–	VVa	VVa	vAA
g) <i>Providing an avenue to communicate to other stakeholders</i>						
Create awareness about local perspectives and issues among external stakeholders	AA	–	va	va	VVa	VVAA

VV = very effective in Vietnam, v = moderately effective.

AA = very effective at Australia, a = moderately effective [-] = not effective/or not used (see Table 1) at a site.

Note: Some techniques were used more frequently than others at different sites, so Table 1 should be referred to in conjunction with this table.

^a Although Appendix A provides an overall indication of the relative merits of techniques in each country for many purposes; the pros and cons of each technique were not always consistent. 53.

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