

DELIVERABLE 4

**REPORT ON THE DEVELOPMENT
OF THE QUESTION-BASED RESOURCE**

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WRC project K5/2074/1

Change Orientated Learning and Water Management Practices

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ABBREVIATIONS

ADM	Amatole District Municipality
BRC	Border Rural Committee
CBNRM	Community based natural resource management
CBO	Community based organisation
CF	Catchment Forum
CHAT	Cultural Historical Activity Theory
COP	Community of Practice
CPA	Communal Property Association
DWA	Department of Water Affairs
ELRC	Environmental Learning and Research Centre
IK	Indigenous Knowledge
IWRM	Integrated Water Resource Management
NGO	Non-Governmental Organisation
PhD	Doctor of Philosophy
PRA	Participatory Rural Appraisal
RSA	Republic of South Africa
SLIM	Social Learning for Integrated Management
US	United States
WfF	Working for Food
WfW	Working for Water
WM	Water Management
WRC	Water Research Commission
WRM	Water Resource Management
WUA	Water User Association
ZCBNRMF	Zambia Community based natural resource management forum

GLOSSARY OF TERMS

Action Research: An approach to problem solving in which individuals work together in learning sets, supporting one another to frame and make sense of difficult situations, to work out potential options for managing these situations, and evaluate their progress as they try out these options in practice (Colvin, J et al. 2010, 89).

Activity System: The minimal meaningful context for understanding individual action.

Community of Practice: A group of people who are collectively engaging in a similar activity. Through sharing experiences and knowledge, members of the group learn from each other.

Cultural Historical activity theory: A framework and methodology for exploring phenomena. It focuses on the changes that happen within our minds which lead to modifications in the way in which we interpret and act on our world. It rests on two premises: first, that the context we find ourselves in is central to how we develop and second, that the way we learn is a social process which internalises the rules, values, norms and beliefs of the culture we find ourselves in (Stetsenko and Arievidtch 2010, 237).

Focus Group: A research technique that collects data around a particular topic through group interaction, with questions being determined by the researcher and then presented to the group for discussion (Litsoseliti, L. 2003).

Knowledge flow: How knowledge moves from one group to another and influences practice.

Mediation: The means by which an individual acts upon or is acted upon by social, cultural and historical factors in human activity (Engelstrom in Daniels, 2008, 40).

Participatory Rural Appraisal: “A growing family of approaches and methods to enable local people to share, enhance and analyse their knowledge of life and conditions to plan, and to act.” (Chambers in Van Vlaenderen, 1995, 1).

Praxis: The relationship between theory and practice, where theories or ideas are enacted, exercised and applied.

Social Learning: An understanding that learning occurs when people engage with one another and share diverse perspectives in a trusted environment, usually around a collective action.

Triangulation: The use of multiple data-collecting techniques to increase the validity of research findings.

LIST OF DELIVERABLES

Deliverable	Description
1. Review Document	Literature review and aligning of fieldwork planning and resource design with review.
2. Start up Document	Project design and identification of site for research.
3. Fieldwork report	Report on fieldwork and development of the resource.
4. Development of question driven resource publications based on case activity systems	Question-driven resource publication and report on its development.
5. Design of community directed catalogue	Document setting out an approach to designing a community directed catalogue for mediating processes and expanding learning in WRM practice contexts.
6. Curriculum framework for mediator training programme	Mediator training programme.
7. Report on mediator training and activity systems	Report on mediator training programme, which will include the piloting of the question-driven resource.
8. Final report & masters studies	Final report and Masters studies.

OBJECTIVES OF PROJECT

1. Identify and support the skills that are needed to mediate learning about water management practices in an Eastern Cape community. For this project, the practice of rainwater harvesting will be used as an example.
2. Research the development of a knowledge resource that could be used to develop the capacity of community-based mediators of water knowledge. The resource will be developed in response to and in support of an existing community-based water management practice in the Eastern Cape: for this project, the practice of rainwater harvesting in the Cata area near Keiskammashoek.

How this deliverable addresses these aims

This deliverable consists of the first draft of the question-based resource and a report on how this resource was developed. It responds to the aims in the following way:

1. The report is the first step in reflecting on the process of developing the resource and the effectiveness of the resource for developing the capacity of community-based mediators of water knowledge.
2. The report will begin identifying the skills that are needed to develop a resource of this nature.

INTRODUCTION

This report documents the first phases of developing a question-based resource as a mediation tool, and begins to reflect on the learning that has occurred through this process.

The next step will be to check the effectiveness of the resource by sending it out for review to a few key water communication practitioners and by presenting it to the two communities that we worked with, namely Cata and Glenconnor.

PILOTING A PROCESS OF CHANGE ORIENTATED LEARNING

The development of a question-based resource requires the following phases:

A: Understanding how people learn in their context about community-based water management practices.

B: Raising questions based on people’s accounts of their practice.

C: Developing a resource based on these questions and based on an social understanding of learning.

D: Documenting and reflecting on this process with the aim of developing a curriculum framework for training in mediation.

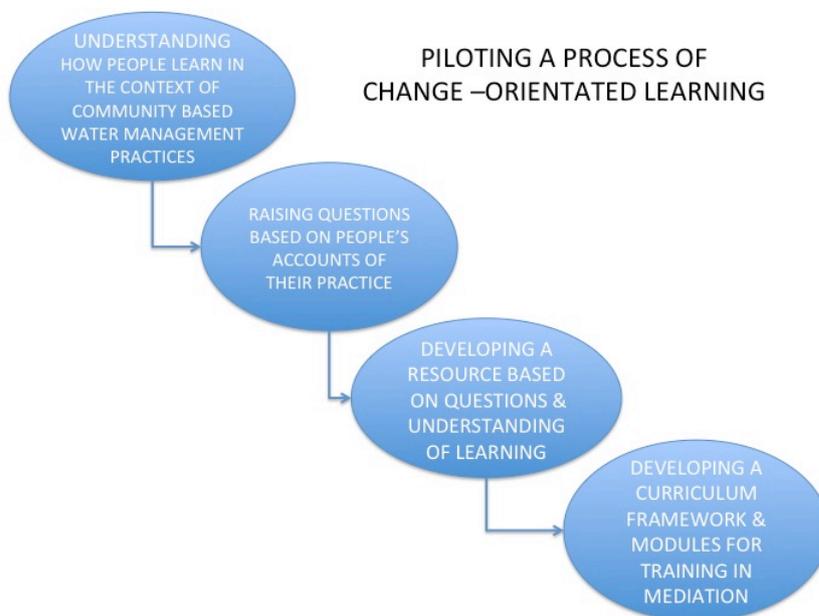


Diagram 1: The process of piloting the development of a question-based resource.

The table below highlights how the different research activities fit into the phases of developing the resource.

Table 1: Research Activities in relation to the phases of developing a question-based resource for mediating change.

RESEARCH ACTIVITIES

UNDERSTANDING HOW PEOPLE LEARN	RAISING QUESTIONS BASED ON PEOPLE'S STORIES	DEVELOPING & PILOTING A QUESTION DRIVEN RESOURCE	MEDIATOR TRAINING PROGRAMME
<ul style="list-style-type: none"> • CHARLES PHIRI'S RESEARCH – "HOW DO COMMUNITIES LEARN THROUGH PARTICIPATING IN IWRM PRACTICES?" • REVIEW OF SOCIAL LEARNING & MEDIATION • NINA RIVERS RESEARCH - THE MEDIATING PROCESSES WITHIN SOCIAL LEARNING 	<ul style="list-style-type: none"> • NINA RIVERS RESEARCH – THE MEDIATING PROCESSES WITHIN SOCIAL LEARNING 	<ul style="list-style-type: none"> • DEVELOPMENT OF QUESTION – DRIVEN RESOURCE & CATALOGUE • PILOTING RESOURCE & CATALOGUE – NINA RIVERS RESEARCH 	<ul style="list-style-type: none"> • DEVELOPMENT OF CURRICULUM FRAMEWORK • PILOTING & EVALUATING TRAINING PROGRAMME

A: Understanding how people learn

As mentioned in previous deliverables, this project emerged out of a consultancy done for the WRC on knowledge flow to people most at risk. One of the outcomes of that study was the importance of understanding how we know what we know, in other words how we learn (Burt & Berold, 2012). The report highlights how we construct knowledge that fits our own experience of reality (Berger & Luckman, 1967), and how we learn through interaction with others, in response to changing situations, and by applying what we know and responding to what happens (Burt & Berold, 2012, 12). We wanted to apply this understanding of learning to the development of a question-based resource. The first step in doing this was to understand how people learn in the context of particular water management practices.

What we mean by water management practices are practices that people carry out in their everyday life that involve water and a need to manage water. Most educational processes or capacity-building processes start with what a group of people need to know to fit into existing systems of water resource management. This often leads to generic training programmes or resources.

We took a different approach. Rather than think about what people needed to know about IWRM, we wanted to identify practices that are already part of people's everyday management of water, and see whether we could support these practices.

Understanding learning and mediation in IWRM (Del 1)

We wanted to further explore learning in the context of IWRM to get an understanding of how it has emerged over time. This was done through a literature review incorporating reviews of social learning in four contexts: natural resource management, agricultural extension, participatory approaches to development and Integrated water resource management.

We reviewed what was meant by the mediation of knowledge, as one of the findings of the WRC research consultancy was that resources need to be mediated. What our interviewees meant by mediation was a situation in which an individual or group engaged with communities and mediated knowledge to meet the community context. When looking at the literature we realised there were broader understandings of mediation that may affect our understanding of change-orientated learning and how it happens.

Social Learning

The main findings of the review on social learning were:

- The focus on learning that is prevalent in IWRM, and natural-based resource management generally, has arisen out of a questioning of WRM. Engineering-based managerial approaches have clearly failed to deal adequately with the growing understanding of the complexity of environmental problems. It has also become clear that environmental systems are inseparable from human systems.

This does not mean that the engineering approach was not successful within its own terms, which were to see WRM as providing and securing water through infrastructure development. In fact the engineering approach was very successful in this regard. But over the years our understanding of human beings' relationship and connectedness to the environment has changed. Social and political issues relating to water can no longer be dealt with as separate from technical issues. Even within scientific paradigms, different disciplines are now working together to understand the complex interactions of the natural world and how human intervention impacts on these interactions.

Because of this change in focus from management as securing water for human use to water as an integral part of human and non-human life, there is a change in our understanding of what we need to know and how we apply this knowledge in our interdependent activities with the natural world. Social learning (or learning as a social process) is being explored in many fields as a response to this complexity

with an understanding that we learn not just to know but to be able to organize, be flexible and adaptable.

Mediation

The second section of the review focused on understanding the literature on mediation, particularly the work of Vygotsky and his successors. One definition of mediation as given by Engeström, is the means by which the individual acts upon and is acted upon by social, cultural and historical factors in human activity (Daniels, 2008, 4). Thus knowledge and learning is culturally shaped and mediated within a particular time and space. Lev Vygotsky states that this thinking and acting is mediated by signs and tools, can be implicit, as in cultural practices, or explicit, as in a learning resource or a training programme.

What does this mean for developing a question-based resource?

The original aim of writing a user-friendly resource was to make research knowledge more accessible and useable to communities outside the research community, particularly communities who are at risk due to socio-economic circumstances. We realised that this was more than a matter of repackaging research information into a more readable format. We wanted to link research knowledge to local knowledge, practice and experience (Burt & Berold, 2012). Local knowledge included not only people living in a particular area in a particular context, but people who have worked in the area too.

We decided that the way to do this was to base the learning resource around questions that arise out of the context of people engaged in a particular practice. We also had to consider the ways in which knowledge is mediated and what the current tools are for mediating knowledge around a particular practice. We wanted our learning resource to be a tool that would enhance the current way in which learning is happening in the community. It would be written to support ongoing learning in context rather than be a stand-alone learning tool.

How Communities learn through participations in IWRM practices

Charles Phiri in his masters thesis took up the challenge of helping us understand how learning actually happens in the context of local water management practices. The main findings of his research were documented in Deliverable 3 (Burt et al, 2012). He found that learning was most effective when it was incorporated into and supported practices that communities are already involved in. The existing practice becomes the centre of a wheel around which many different learning opportunities can emerge (Burt et al, 2012).

Phiri reported that learning happens mostly through sharing, conversations, and storytelling, rather than through resource material. We realised that if resource material was to contribute to the shared space of learning, it would have to be woven

into the story or stories already being told around this practice, to ensure that it becomes part of the ongoing conversation of learning.

Nevertheless workshops or training programmes do have a role to play. They often seem to fast track learning if they are appropriately considered and responsive to people's needs. Heila Lotz-Sisitka commented that an important research question would be to consider when and how this happens within training programmes (ELRC, 2012). We may need to consider the same question for learning resources: when and how can they fast track learning?

What does this mean for developing a question-based resource?

Any research knowledge that we wished to incorporate in a resource needed to support the practices that communities were already involved in. We interpreted this to mean that knowledge based on research and experience should be written around questions and choices that have emerged from people's practice.

Phiri's findings also pointed to the way in which conversation and story are the ways in which people share information and learn from each other. Stories also place knowledge in a local context and as part of the everyday lives of people. The main claim for the use of narrative in educational research is that humans are storytelling organisms who, individually and socially, lead storied lives. The study of narrative, therefore, is the study of "the ways humans experience the world" (Clandinin and Connelley, 2000). We wanted our resource to reflect this experience and work with the knowledge, questions and choices introduced by people's stories.

B: Raising questions based on people's stories

Phiri's research did not directly elicit questions about the water practices he was investigating. Nina Rivers returned to Cata with Monde Ntshudu to listen to the stories of people engaged in rain water harvesting. We hoped this process of listening to people's accounts of their practice, rather than asking questions about their practice, would help us understand the choices they'd made.

At the same time we had informal conversations with colleagues about their experiences with rain water harvesting. We followed up on research that had already been done and collected resources, reports and pamphlets on rain water harvesting practices.

From the stories, conversations and reading material we were able to draw up a series of questions about rain water harvesting. The people that Rivers and Ntshudu interviewed did not identify questions or articulate their choices directly, but in reading their stories we could see where they had made choices and the kind of information they needed to make these choices. This allowed us to isolate questions from the problems that they expressed or the solutions that they had given.

C: Development of the question-based resource

Engaging an expert practitioner – learning to build knowledge networks

What we realised during the process of identifying questions, was that nobody in the research team had practical experience of rain water harvesting. Because we were concerned that this lack of experience would lead us to miss some obvious questions, we approached an experienced practitioner, Tim Wigley of Earth Harmony Innovators, to guide us in this area. Wigley had worked in Cata and other areas, teaching rural communities how to grow food and harvest rain water. He was tasked with writing a response to the questions that the research team had drawn out of people's stories. He came to a meeting and heard some of the stories that Nina Rivers had collected to give him an idea of where the questions had come from.

Looking back on the process, we can see that involving someone who has direct on-the-ground experience of the practice being investigated is vital for developing a question-based learning resource. Tim Wigley was a particularly appropriate person: not only did he have had the technical information, he knew first the communities of Cata first hand. He also has a passionate belief in teaching more sustainable living practices for the benefit of both people and the environment.

Rewriting and editing the report

The WRC reference group had agreed that it was acceptable to narrow the rain water to collection in tanks. However Tim Wigley, with his fundamental ecological perspective had his own ideas of what the resource should be. He wanted to get to the root of environmental issues, which was essentially about the health of the soil. For him, the primary site of water storage was the soil itself, and its ability to store was directly dependent on soil. All the questions about tanks were addressed in his draft, but restoration of the environment was primary.

Tim Wigley's draft was sent to Robert Berold, a very experienced resource editor. Without wanting to diminish Wigley's vision, he decided to reorder the text by foregrounding the rain water tank questions, moving the soil health and soil water storage aspects to the second part of the document.

Robert Berold and Jane Burt believe that Tim Wigley's broad vision of environmental health, while not really fitting in to a short practical resource, should not be dropped. Our intention is to develop this into a complementary resource on its own, which will provide scientific-philosophical background to the current resource.

Linking stories to text

Berold's edited version was then passed on to Jane Burt who re-traced the questions and answers of this draft to the stories that were collected by Nina Rivers and Monde Ntshudu, placing stories into the appropriate sections. As she did this, she also

identified questions that needed clarifying, and noted resources that would complement certain questions. These resources will be listed and summarised in the catalogue booklet which will be companion volume to the resource, to be part of the next deliverable.

Further editing

Berold re-edited the text for readability, and gave it to a proofreading editor to work with, and then edited it again. This draft was sent to all team members for comment.

Berold explained that the purpose of doing all this editing is to make the text completely transparent. His editing principles are:

- Use short simple sentences, active rather than passive voice. Avoid repetition. Delete anything that is not necessary to the point being made.
- Write in ordinary conversational language that invites rather than intimidates a hesitant reader.
- Do not use jargon, development terms, theoretical terms – do not use any words that would be unfamiliar to a matriculant from a rural school.
- Avoid complex headings and hierarchies, use a structure of one main heading style and one sub-heading style.

Berold believes that the voice of the writer must be retained in the edited text, in fact ideally the writer should not be able to detect that the text has been edited.

This project will be looking for ways to teach mediators such as extension workers, to produce their own resource. How will we be able to train them in writing and editing and inserting graphic elements? Berold suggests that part of the mediation training programme be on learning to write, followed by learning how to edit one's own text. A writing workshop can be incorporated into the mediator training. Editing training would come via email/long distance mentoring, whereby the writers would send text to a mentor who would help the writer make editing decisions.

Design of the resource document

Again bearing in mind that the mediators will be doing their own resource production, this resource needed to be designed and produced in a way that was simple to learn and easy to do. The layout was therefore done in Microsoft Word instead of a DTP design programme.

It was decided that graphics would be best done through photographs of cellphone camera quality. Photographs taken in this way by researchers were converted to black and white and edited with easy to use software for best light and contrast. Such software can also turn photographs into what look like line drawings.

When the resource is shared with the community we will produce the photographs in both photographic and line drawing forms, and see which they would prefer.

The resource is designed to be produced as an A5 booklet on an ordinary photocopying machine.

All the software choices will be documented in step by step form for mediators to be able to make their own booklet designs.

D: Reflections and next steps

Reflections on the development of the resource

Now that the resource has been developed, Jane Burt will hold a focus group meeting with the research team to reflect on the development of the resource. She will also interview each member of the team on their particular role in developing the resource. The aim of this process will be two-fold:

1. Reflect on the whole process of developing the learning resource and what you see as its benefits and limitations.
2. Develop a module on how a mediator can develop his/her own question-based resource. The module will be used in the mediation training programme.

Already some issues about the production of the resource and its purpose are emerging. For example:

- How exactly can a written learning resource support be a responsive, iterative learning process?
- By confining the research questions to one local context. are we not losing the possibility of the resource being useful in other contexts? For example, Cata is a well-organised community that has had a lot of external support. Of particular relevance for this resource is the fact that ,most community members were donated their rain water tanks. Would rain water tanks be the first choice of water harvesting in areas where people would have to buy the tanks themselves? Nina River's work in the Sunday's River Valley, the second site of the study, will include testing this resource. This may help us grapple with this issue.
- Can a single author out of his/her own empathy and experience reflect the voice of a community. Is such an author's voice ever a substitute for the multiple voices of a community? Can someone like Tim Wigley, with vast

experience and a strong vision of ecological health write a resource on behalf of people or even on behalf of the planet?

- As a research team we need to think about what the stories of people in context added to the written resource process and how we work with these stories. What happens if the majority of people are engaging in a practice that is unsustainable or illegal? To use water from community taps for home gardens is illegal, yet a lot of people in Cata openly admitted to doing so, arguing that they needed to keep the rain water from their tanks for household use because the water quality was better. How do we reflect this in the written resource and what solutions do we offer?
- The research process was separated from the process of developing and producing the resource. In retrospect it would probably have been better if the whole team could have worked more closely, and even if briefly, to visit the villages together in order to get a bigger picture of the project. Due to funding and time constraints this is often difficult. The team will consider ways of doing this for the second half of the project.

Next steps

- Send the question-based learning resource out for review to the WRC project reference group and other practitioners who can make constructive inputs.
- Translate the resource into Xhosa. Nina Rivers has also requested that the resource be translated into Afrikaans. Currently we don't have the funding to do this.
- Nina Rivers to workshop the resource with the Cata and Glenconnor communities and report on any gaps and confusions that arise.
- The resource could be piloted in a school as part of the SANPAD/GCSSRP project run by the IWR at Rhodes University. Exactly how this will happen is still being negotiated.
- The writing-editing mentoring process to be piloted with the additional resource text based on Tim Wigley's environmental vision.

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