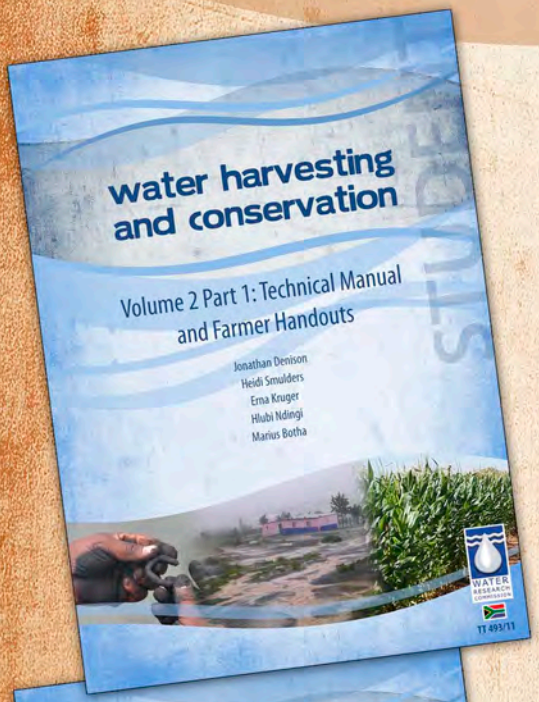
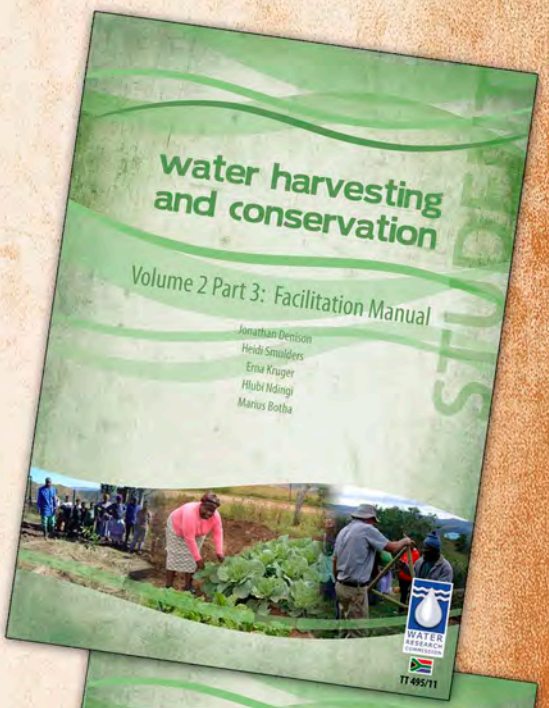
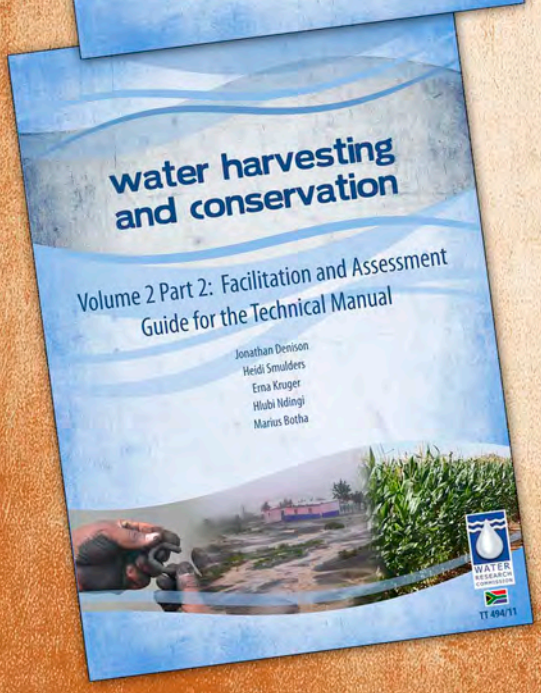
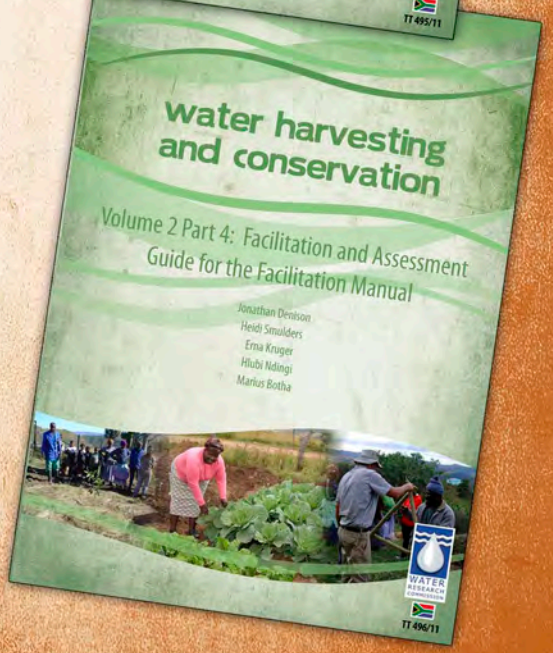
water harvesting and conservation

Volume 1: Development of a comprehensive learning package for education on the application of water harvesting and conservation









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WATER RESEARCH COMMISSION

TT 492/11

Water Harvesting and Conservation

Volume 1: Development of a comprehensive learning package for education on the application of water harvesting and conservation

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Report to the
Water Research Commission

by

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This report forms part of a set of 5 reports. The other reports in the series are:

Volume 2 Part 1: Technical Manual and Farmer handouts (WRC Report No. TT 493/11);
Volume 2 Part 2: Facilitation and Assessment Guide for the Technical Manual (WRC Report No. TT 494/11);
Volume 2 Part 3: Facilitation Manual (WRC Report No. TT 495/11), and
Volume 2 Part 4: Facilitation and Assessment Guide for the Facilitation Manual (WRC Report No. TT 496/11)

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Executive Summary

Introduction

The Umhlaba Consulting Group developed the comprehensive water harvesting and conservation learning materials package over the period November 2007 to March 2011.

The learning materials were developed within a 'training of trainers' framework targeting three user groups:

- learners at training organisations (this includes agricultural extension officers and rural development fieldworkers who will later work with gardeners and farmers),
- facilitators at training organisations who will be responsible for teaching the WH&C training course, and
- resource-poor gardeners and farmers who are the end users of the WH&C techniques.

It is important to note that the Comprehensive Learning Package that was developed under this project does not cover the crop production and agronomic elements that are essential for successful gardening and farming. The first part of the package is focussed specifically on the technical aspects of improving water availability in homesteads, gardens and fields, using water harvesting and conservation techniques. The second part of the learning package aims to equip fieldworks and extension officers with the facilitation skills needed to transfer the knowledge of these WH&C techniques to, and between, home-gardeners and farmers.

The materials therefore have useful application:

- EITHER with gardeners and farmers who already have crop production knowledge in which case the WH&C techniques will then help them increase their agricultural water quantity and security leading to improved production with reduced risks,
- OR where a parallel training programme is implemented with gardeners and farmers that is specifically focussed on food and crop production techniques.

Structure of the Learning Package

The package comprises three main parts:

1 A Technical Module covering water, soils and WH&C methods
2 A Facilitation Module covering facilitation techniques within a Participatory Innovation Development approach
3 A set of Farmers Handouts with illustrated steps on how to implement the methods.

Each of the technical and facilitation modules comprised two volumes. There is a detailed, annotated and illustrated manual for learners, and a Facilitation and Assessment Guide for course facilitators. These are set at the level of NQF 5 on the (new) 10 tier scale. The set of farmers handouts are designed for people with low literacy and are illustrated 'how-to' instructions for the water harvesting and conservation methods.

Stakeholder Consultation

It was a contract requirement that the materials be developed in close consultation with key stakeholders to ensure relevance of materials to likely organisations of learning, and to end-user needs. The project team consulted widely over the duration of the assignment and found that while there was consensus on the need and usefulness of the water harvesting and conservation learning materials package, there were widely divergent opinions in regard to accreditation pathways for the materials. Consultation included: AgriSETA, the Agricultural Colleges and some Higher Education Organisations (University of KwaZulu-Natal, University of Pretoria, University of Free Sate, Fort Hare University).

The outcomes from the consultation process were:

- There is marked positive interest in water harvesting and conservation and enthusiasm to have this new material embedded in existing and new courses.
- The Agricultural Colleges in particular expressed specific and immediate need, such that some are planning to use the draft materials in their 2011 curricula.
- Relevance of the materials (set at NQF 5) seems to be primarily at FET level and not HET level (NQF 6 and above).
- Colleges stated a need for assistance in restructuring curricula, both for existing courses, and establishing a new short course / skills programme (at 25 to 30 credits) using the entire set of development materials.
- A motivation for a training course for those lecturers/facilitators who would be responsible for facilitating WH&C courses was made as most lecturers did not have experience with WH&C and the experiential learning processes on which the facilitation course is structured.

Accreditation

The state of flux of the national accreditation framework, particularly the establishment of the Quality Council for Trade and Occupations (QCTO) over 2008-2010, and the termination of registration of new Unit Standards (2011) as reported by AgriSETA, presented an ongoing challenge to the accreditation framework for the materials. Given the uncertainty and the absence of consensus between key stakeholders, the learning materials were developed to allow future accreditation along Unit Standards lines, and within the QCTO framework.

The two courses comprise a total of 30 credits, which ties in well with the Quality Council for Trade and Occupations occupationally directed Short Courses (minimum 25 credits, with 30 credits being acceptable). The two WH&C facilitation and technical courses were written as an integrated package and are ideally run as a single course, which fits in well with the short course structure. The consultation with the Agricultural Colleges showed clearly that this arrangement would be most suitable to them.

The facilitation manual was also developed in alignment with the following Unit Standards:

- Qualification ID 59409: National Certificate in Agricultural Extension, NQF Level 5
- US 252476 (10 credits) Develop and implement an extension programme plan
- US 252474 (5 credits) Implement strategies for behaviour change.

The technical manual was developed in the absence of usable Unit Standards at a suitable NQF level (4, 5 or 6 on the newer 10 tier structure). There are only two possible Unit Standards relating to water harvesting, which are both at NQF 2. The Technical Guide has been prepared based on literature review, consultations and team assessment of what is needed to teach the key elements of water harvesting and conservation.

Future tasks which follow the completion of this assignment, in regard to accreditation are to identify the appropriate qualification and specialisation within the QCTO, and should these not exist at present, pursue the QCTO specialisation registration process. The specialisation would be achieved by successfully completion the WH&C short course set out in the comprehensive learning materials.

Development Process and Sources of Information

It was the intention from the onset of the project that no primary research and development of water harvesting and conservation methods would be undertaken, but that the learning package would be compiled from existing information. The materials were therefore developed from existing publications and other information in the public domain. The range of methods encountered and found to be applicable to South Africa are documented in Chapter 1 of the Technical Manual in a table of techniques and names. There was a set of primary references that were used to guide the selection of methods to be included, and on what nomenclature would be used. These are included in the References section of this Main Report. All sources of information both published documents and from websites, have been carefully and accurately referenced at the end of each chapter in the manuals. Where information has been replicated without change in the guides, specific permission was requested and received in writing from the original authors or from the originators of video clips, and these written permissions are maintained in the project archive of the Umhlaba Consulting Group.

Piloting of the Learning Materials

The piloting of the materials was conducted over six months at the Centre for Adult Education at the University of KwaZulu-Natal. The piloting process was designed to maximise feedback by setting up a review process with feedback from:

- learners/ students
- facilitator/ trainer
- the project team
- UKZN (external examination of the learning programme).

The piloting was largely financed by project funds, in the form of payment of fees for 14 learners, payment of the facilitator's fees and financial support to fieldwork and practicals

that were undertaken. Detailed weekly assessments from the facilitator provided a substantiated basis on which to finalise the guides. Feedback from the WRC Reference Group and internal team review completed the piloting and revision process.

Capacity Building

The nature of the assignment was that it was primarily a materials development exercise, requiring higher level professional input. There was little conventional research activity. However, capacity building was embraced as follows:

- 68 students from Walter Sisulu University Fine Art Department were financially supported (fieldwork exposure and competition funding) and directly involved in illustration of the guides.
- 14 learners at the UKZN Centre for Adult Education completed the full WH&C course (Technical and Facilitation components) during the pilot and graduated from the Centre with a Certificate in Development Facilitation.

Future Research

Preparation for knowledge dissemination: The purpose of the assignment was to create materials to further water harvesting and conservation education and practice. Three future activities, while not strictly 'research' can actively market and promote uptake in line with the primary objective of the assignment:

- Identify the appropriate qualification and specialisation within the QCTO, and should these not exist at present, pursue the QCTO specialisation registration process.
- Develop and roll-out to all of the likely learning organisations, a 3 day training of trainers course to prepare facilitators to present the course to learners.
- Explore and provide alternate motivations in relation the Department of Agriculture policy that Extension Officers may only study courses equal or higher than their existing qualifications as this will limit these people gaining the value of the WH&C course.

A South African WH&C Nomenclature: There are major inconsistencies in the terminology around water-harvesting and conservation in South Africa, also reflected in Water Research Commission publications. This results in confusion and misunderstanding. Colloquial terms such as 'run-on' water harvesting and 'in-field' water harvesting, have different meanings in the international domain and are not consistently used locally. It is warranted to develop South African terminology and align this, where practical with international norms, like the United Nations Food and Agriculture Organisation classification system described by Denison and Wotshela (2008).

Socio-economic assessments of WH&C: There are many documented methods of WH&C, with 13 of these included in the technical manual. To date, there is only one socio-economic assessment of one method that has been conducted in South Africa (i.e. 'infield water harvesting'). While this work shows positive returns and presents a strong motivation for implementation of that method, the results do not necessarily

extend to other WH&C methods or initiatives. Decision-makers and funders are often reticent to fund 'new' technologies and thorough quantitative and qualitative socio-economic assessments on a wider range of methods will provide stronger motivation.

Technical video on WH&C. A previous WRC assignment produced a 20 minute DVD which gave an overview of WH&C in South Africa. This low-budget documentary with a broad scope did not focus on technical details of the different methods. A technical DVD which provides specific how-to-do-it information on a range of methods would be a valuable asset to facilitators who will run the course at learning organisations. Such media would also be valuable to fieldworkers who will work with gardeners and farmers at village level.

Conclusion

The comprehensive learning materials package that has been developed meets an articulated need in the agricultural water sector. It has been structured to comply with both the Unit Standard and the Quality Council for Trade and Occupations accreditation frameworks. The draft materials were successfully piloted in a formal learning environment and were reviewed by seven agricultural colleges. The materials were found to be interesting, relevant and useful and there is significant interest to embed the materials into existing and new courses with immediate effect. The challenges that face a rollout are linked mainly to finalising the accreditation and materials registration process, to assisting learning organisations to modify their curricula and finally to establish a training course for facilitators at the organisations so that they can effectively implement the course.

Acknowledgements

The project team would like to thank the Water Research Commission for the funding and intellectual support provided to the assignment. The content was developed under the watchful guidance of Dr Andrew Sanewe and the WRC reference group, whose input is gratefully acknowledged:

Dr AJ Sanewe (Chair)	- Water Research Commission
Dr GR Backeberg	- Water Research Commission
Prof W van Averbeke	- Tshwane University of Technology
Prof AT Modi	- University of KwaZulu-Natal
Ms JE Sprinkhuizen	- National Department of Agriculture
Dr G Kundhlande	- University of the Free State
Dr J Stevens	- University of Pretoria
Mr J Foli	- Owen Sithole College of Agriculture
Mr CM Stimie	- Rural Integrated Engineering (Pty) Ltd

The piloting process was conducted at the University of KwaZulu-Natal and the interest and guidance of Anne Harley, which made that collaboration possible, is gratefully acknowledged. Marius Paulse, the Chair of the Association of Principals of Agricultural Colleges (APAC), willingly assisted in gaining access to the colleges. Johan Engelbrecht of AgriSETA provided time and valued comment throughout the assignment on accreditation and registration of materials. Prof Wim van Averbeke provided input to the soils and systems chapters of the technical module.

A number of people from the agricultural water research and education community provided input to workshops, Reference Group meetings and materials review including: RC Ndwamato, NN Masemola, Prof Leon van Rensburg, Marna de Lange, Herman van Deventer, Beatrice Enslin, Jonathan Wigley and BJ Dlamini.

The artwork on each chapter page, which intentionally gave a youthful and non-technical splash of colour to the manuals, was selected from a water-harvesting awareness project run with Year 1, 2 and 3 students at Walter Sisulu University School of Fine Art. This initiative was made possible by the enthusiasm of Mr Phumlani Mbanya and Dr John Steele of the school.

The black and white illustrations in the manuals were drawn with unending patience by Hlubi Mdungi and the two full page posters were drawn by Kathy Arbuckle.

CONTENTS

1 INTRODUCTION

1.1 Appointment

The Umhlaba Consulting Group was appointed in October 2007 by the WRC to undertake a three and a half year assignment to produce a learning package on water harvesting and conservation (WH&C). The project commenced in November 2007 and was completed in March 2011.

The main deliverables are the set of learning materials themselves and this report must be read in conjunction with the full learning package. This final report provides an overview of the process of developing and testing the guides and sets out how they might best be marketed and used.

1.2 Assignment Objectives

The primary objective of the assignment was to develop a comprehensive learning package for water harvesting and conservation within a 'training of trainers' framework; there are three user groups who will use different parts of the package in different ways:

- facilitators at training organisations
- learners at training organisations (who will later work with gardeners and farmers)
- resource-poor gardeners and farmers.

The package comprises three main parts which are summarised in the table below:

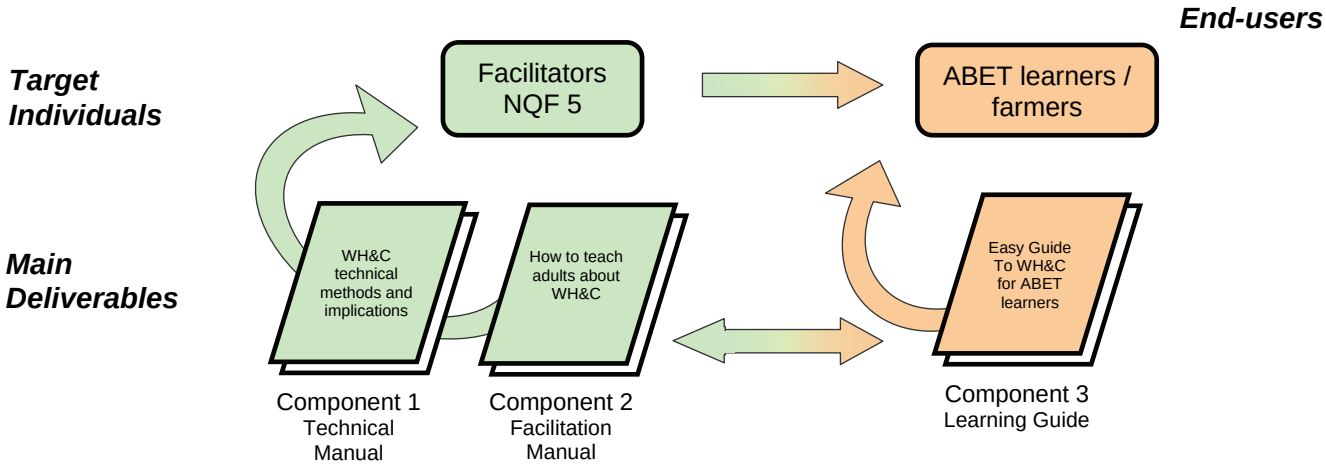
Table 1.1: Components of the Comprehensive Learning Package on Water Harvesting and Conservation

	Package Component	Book	Content Description	User Group
1	Technical Module	Technical Guide	• Introduction to water, soils and ecosystems. • Detailed 'how-to' descriptions of 13 WH&C methods.	Learners training as water harvesting facilitators
		Facilitation and Assessment Guide	• Suggested lesson plans • Activity explanations • Rubrics • Illustrative DVDs (2 clips totalling 30 minutes)	Course facilitators (i.e.' lecturers')

	Package Component	Book	Content Description	User Group
2	Facilitation Module	Facilitation Guide	• Introduction to facilitation and development in a participatory technology and innovation (PTID) framework • Stepwise facilitation approach, techniques and skills.	Learners training as water harvesting facilitators
		Facilitation and Assessment Guide	• Suggested course outlines • Activity explanations • Rubrics • Illustrative DVD (1 clip of 3 minutes)	Course facilitators (i.e. 'lecturers')
3	Farmers pack	Handouts	Summarised illustrated descriptions of main WH&C methods	Growers and farmers (i.e. end users).

Components 1 & 2 of the package were developed at NQF level 5, and are aimed at learners who will undergo training within a formal training environment. This is expected to include most of the Agricultural Colleges, some of the University Adult Education programmes, and AgriSETA accredited training service providers. (Accreditation issues and likely training environments are discussed in detail later in the report.)

Component 3 was developed at ABET levels 1/2, and is aimed at farmers and gardeners who will work with the trained facilitators when they complete to the course, to implement water harvesting and conservation in their gardens and on their farms.



The project team adhered to the process that was set out in the Terms of Reference in developing the materials; as follows:

- Identify the potential end-users of the learning materials (trainers/facilitators, and farmers/learners in communities) and to engage with them in a representative manner in order to identify end-user needs.
- Identify potential educational role players (e.g. SETAs/ colleges) and subject matter experts (such as researchers, extensionists, NGOs and farmers already using WH&C techniques and practices).
- Identify the existing unit standards for training in WH&C and the learning and research material on WH&C that is published and available.
- Evaluate the available learning and research material in terms of (amongst other things) its content, relevancy, completeness, and possible gaps as it relates to the identified end-user needs.
- Adopt and adapt available material and develop a comprehensive learning package consisting of a technical manual and facilitation manual for trainers/facilitators at NQF levels 4/5, and a learning guide for learners/farmers at ABET levels 1/2.
- Compile a provisional learning package, to test it in the field with trainers, facilitators and learners, and modify the materials as needed.
- Compile a final learning package for the training of learners in the application of WH&C on a national basis.
- Start the process of accreditation and the marketing of the developed learning package to SETAs, colleges, etc.
- Recommend the possible development of new unit standards by the SGB if necessary.

1.3 Overview of the Project Content and Timelines

The project was conducted according to the activity and timeline summary which extended over 3 ½ years, and is shown in Table 1.2 below.

Table 1.2: Project Timeline and Activities

Year 1	Year 2		Year 3		Year 4	
Oct 2007 Mar 2008	Apr 2008 Sept 2008	Oct 2008 Mar 2009	Apr 2009 Sep 2009	Oct 2009 Mar 2010	Apr 2010 Sep 2011	Oct 2010 Mar 2011
Development of Framework • literature survey • Stakeholders • Target Group • Needs Assessment	Analysis and prepare Draft Learning Package Part 1 • National stakeholder workshop in May 2008 • Gap analysis between needs and available information • Learning package outline of all three packages		Prepare Draft Learning Package Part 2 and Part 3	Training and Pilot Testing of Learning Package • Liaison with colleges who are interested to trial materials • Training of facilitators (e.g. extension workers) using materials • Monitoring and support to facilitators training ABET learners		Revision and Finalisation • Revise content and structure based on feedback

1.4 Development Process and Sources of Information

The materials were developed from existing publications and other information in the public domain. It was the intention from the onset of the project that no primary research and development of water harvesting and conservation methods would be undertaken, but that the learning package would be compiled from existing information. The project team drew on a wide range of South African and international publications noting that there is substantial similarity in the core set of techniques, with many variations between locations and between authors. The range of methods that were reviewed and found to be applicable to South Africa are documented in Chapter 1 of the Technical Manual in a table of techniques, with their differing names.

The team did rely on a set of primary references to select the most suitable methods to the target application (i.e. resource poor farmers who are active in home gardens, and/or farming field crops and/or using grazing land in South Africa). These primary references are included in the References section of this Main Report.

All sources of information, both from published documents and from websites, have been carefully and accurately referenced at the end of each chapter in the manuals. Where information has been replicated without change in the guides, specific permission was requested and received in writing from the original authors or from the originators of video clips, and these written permissions are maintained, along with all source documentation, in the project archives of the Umhlaba Consulting Group (Pty) Ltd.

1.5 Contract Deliverables

The contract required the submission of a series of deliverables which were concluded without change to the contract, other than minor amendments to the timing of submissions. The total contract period and contract amount remained unchanged.

Table1.3: Deliverables submitted over the assignment period

No.	Deliverable Title	Description
1	Interim Report on Published WH&C Learning Material	Literature review and summaries of available and existing learning and research materials on WH&C.
2	Report on current Unit Standards	Assessment of existing unit standards for WH&C that can be applied to this assignment.
3	Report on Generic Needs Analysis and Potential Role-players	Needs analysis based on literature review. Potential education role-players (SETAs, colleges) and subject matter specialists already using WH&C practices.
4	Report on Specific Needs of WH&C Users and Non-users	Stakeholder workshop addressing WH&C content, needs, SAQA and unit standards. Evaluation of the specific needs of selected representative communities – both those who have adopted and those who have not adopted WH&C.
5	Interim Gap Analysis Report	Gap Analysis identifying shortfall of information between published information and the generic and specific needs identified above.

6	Learning Package Framework Report	Outline of the structure of the comprehensive learning package including short descriptions of each of the modules of the three components.
7	Progress Report No.1	Progress towards filling the gaps in learning material by adopting and adapting available material and developing the learning package.
8	Draft Learning Package Part 1 (Technical Manual)	A draft submission of Part 1 of the learning package covering the technical WH&C content targeting the NQF 4/5 level facilitators (e.g. ext officers)
10	Progress Report No.2	Progress towards filling the gaps in learning material by adopting and adapting available material and developing a comprehensive learning package.
11	Draft Learning Package Part 2 (Facilitation Manual)	A draft submission of Part 2 of the learning package covering the training skills that the NQF 4/5 level facilitators will need to transfer the technical content to the ABET level 1 and 2 learners.
12	Report on the Pilot Testing Strategy and Implementation Plan	Plan of action for pilot testing the learning package including details on location, people, timing and process.
13	Draft Learning Package Part 3 (Learners Guide)	A draft submission of Part 3 of the learning package covering the training skills that the NQF 4/5 level facilitators will need to transfer the technical content to the ABET level 1 and 2 learners.
14	Progress Report No.3 – Initial Progress on Pilot Project	Progress Report on testing of the learning package including summary of proposed changes to date.
15	Progress Report No.4 – Interim Progress on Pilot Project	Progress Report on testing of the learning package including summary of proposed changes to date.
16	YEAR 3 Annual Progress Report to Reference Group – Progress Report No.3	Outcomes and lessons learnt to date from the pilot project and initial proposed modifications to the learning package
17	Report on Interaction with SETAs, Unit Standard Recommendations and Marketing.	Documentation of the interaction with SETAs and colleges over the course of the project and the marketing possibilities and implications of the completed learning package. Recommendations on proposed Unit Standards
18	Progress Report No.5 – Interim Progress on Pilot Project	Progress Report on testing of the learning package.
19	Draft Final Comprehensive Learning Package	Completed final draft of comprehensive learning package covering all three components.
20	Popular or Scientific Article	Article outlining project targeting scientific or popular audience.
21	Final Comprehensive Learning Package	Completed Learning Package submitted in final format and layout.
22	Final Report on Capacity Building and Process of Developing the Learning Package	Final Project Report summarizing entire process, learnings, capacity building, recommendations on alternative media options and recommendations for future research work.

2 ACCREDITATION ISSUES AND OUTCOMES

The Water Research Commission set out that it was a priority that the materials be developed in close consultation with key stakeholders to ensure relevance of materials to likely organisations of learning, and to end-user needs. The project team consulted widely over the duration of the assignment and found that while there was consensus on the need and usefulness of the water harvesting and conservation learning materials package, there were widely divergent opinions in regard to accreditation pathways for the materials.

While the brief specifically included stakeholder consultation in regard to accreditation, it excluded the actual accreditation of materials, or registration of new Unit Standards (if required). The purpose of the consultation was to 'line-up' the materials for future accreditation.

This section describes the process of consultation with stakeholders and sets out the accreditation issues, leading to a final, rather circular outcome. Given the uncertainties which prevailed throughout the assignment, as described in summary below and in detail in the attached Appendices 1 and 2, the team structured the guides in a way that they would be wholly flexible and could accommodate any of the three main accreditation pathways that emerged:

- accreditation with Unit Standards
- accreditation within the Qualification Framework for Trades and Occupations.
- accreditation as a 25 or 30 credit Skills Development Programme (in late 2010 this has been replaced by occupationally-directed short courses, but has a similar purpose and structure)

This was a challenging task as it required relevance of the materials to be balanced with the varying accreditation requirements and the exclusion of superfluous information. This was successfully achieved; shown by the piloting outcomes and the interviews with the Agricultural Colleges who reviewed the draft final materials. These processes are reported in detail in later sections of the report. The final materials are as useful within any of the three accreditation pathways that might be chosen by the training organisations who will use the materials. It is the team's view, as will be seen from the documentation that follows, that the third and final pathway (i.e. registration as a short course) is likely to be the most useful and applicable pathway. It has also transpired more recently, that this overlaps readily with a QCTO registration. A detailed description of the process, issues and outcomes follows.

2.1 Initial Process to Establish a Suitable Accreditation Framework

Consultations were held with a range of individuals from key stakeholder organisations between November 2007 and February 2008 including: AgriSETA, all of the Agricultural Colleges, UKZN, UFS, UFH, Dept of Labour and Dept of Agriculture. The aim of the discussions was to identify interests and needs in relation the learning package and to explore related accreditation issues. What emerged from this process was an accreditation debate that continued unabated throughout the assignment, primarily due to the state of flux of the national framework and conflicting opinions between key stakeholders. The initial consultations are presented in Appendix 1.

Three workshops were then held during 2008 with a group of experienced educators involved in agricultural water. Expert input was obtained from academics, key Government departments and accreditation specialists. Extensive debate and in three different sessions, interspersed with consultation meetings with the Department of Labour, AgriSETA and the National Department of Agriculture resulted in a resolution on how the materials would be targeted vis-à-vis accreditation. The workshops are summarised below and are fully detailed in Appendix 2, including attendance registers and formal resolutions (pertaining to the assignment).

Each workshop purpose is presented in the table below and an overview of the discussion content is presented thereafter.

Workshop	Date	Primary Aim
1	14 May 2008	Workshop for educational and other stakeholder groups as per TOR to achieve decision on which of 3 accreditation pathways would be most appropriate for the assignment.
2	26 May 2008	Multi-stakeholder meeting with the WRC, Department of Labour and Department of Agriculture to commence formal accreditation process within the Trades and Occupations framework.
3	17 June 2008	Multi-stakeholder workshop, mandated by the Department of Labour to propose the Community of Expert Practice leading to Curricula Development.

2.2 Workshop 1 – Clarification of Accreditation Direction

The accreditation frameworks in South Africa have been undergoing major revision since 2007 to date. There is widespread acknowledgement that the current Unit Standards framework does not, in many cases, meet the more specific training needs of the workplace in commerce, industry and agriculture. For this reason the Quality Council for Trades and Occupations has been structured and will aim to develop skills using a more workplace-oriented skills development approach. The QCTO was officially launched in

February 2010, but at the start of the project was in a pilot phase with concomitant confusion within Departments, Organisations of Learning and related parastatals (SETAs)

In the first workshop (attendance and minutes are presented in Appendix 2 (Annex 1) an accreditation specialist was recruited to present on the complexities and currents of change within South Africa. After discussion and debate it was agreed by consensus that the most practical way forward for accreditation is to develop the materials in alignment with the framework for Trades and Occupations. In order to act on this resolution, the workshop was informed that an official request to the Department of Labour was required. The Department of Labour oversees the accreditation systems in South Africa, and further steps to accreditation have to be directed and approved by it. The Umhlaba Group collaborated with the WRC to submit a formal letter of request for a meeting, and key participant organisations were mobilised to attend the meeting.

2.3 Workshop 2 – Due Process with Departments of Labour and Agriculture

The second meeting (details in Appendix 2, Annex 2) was a procedural meeting arranged with the National Department of Labour and the National Department of Agriculture – the two key government organisations involved in this assignment. The WRC, private sector research entities, and selected academic organisations also attended.

The discussions were held in the context of new legislative processes leading to the establishment of the Quality Council for Trades and Occupations (QCTO). The legislation was approved by Cabinet on 28 May 2008; the QCTO itself was established during 2009 and became functional during 2010. The project duration thus overlapped with major changes to the national accreditation framework which raised a number of challenges and uncertainties.

The meeting with the Department of Labour (attended by the National Department of Agriculture) resulted in official support for the formation an Accreditation Reference Group, motivated by the Department of Labour, to move towards course registration within the QCTO. This was held at the ARC offices in Weavind Park (Silverton) and is described as Workshop 3.

2.4 Workshop 3 – Accreditation Reference Group

The QCTO required a Community of Expert Practice (CEP) to be established in order to decide on the scope of the 'occupation' as it is termed within the organising framework (in this case for a rainwater harvesting practitioner). The CEP would define the occupation and establish curricula details. In order to establish the CEP, the Department of Labour instructed that a Reference Group first be convened (following a clear process, as minuted in Appendix 2, Annex 3) in order to address the following two issues:

- The location of the occupationally-directed learning materials within the Organisation Framework of Occupations (OFO).
- The composition of the pilot "Community of Expert Practice" to be recommended to the Department of Labour

Once the Reference Group had convened and addressed these two issues, the way would be paved for the Department of Labour to take the lead in supporting the process further, both in terms of direction and of funding. This third workshop was held on 17 June 2008, following the specific process required by the Department of Labour, and included the Department of Agriculture and other key players. Substantial detail of the correspondence involved has been included in Appendix 2, Annex 3 in order to fully document the procedural correctness of this step.

In short, the outcomes of the meeting were that:

- A set of names for the Pilot Community of Expert Practice was recommended to the Department of Labour.
- A short motivation for funding was submitted to the Department of Labour in order to financially support the proposed Community of Expert Practice for Rainwater Harvesting and Conservation.
- Specific occupational names and their location within the Organising Framework for Occupations were decided on.

Minutes of the 17 June 2008 QCTO Accreditation Reference Group Meeting are contained in Appendix 2, Annex 3.

Given the clarity obtained on the accreditation process at that point and the involvement of key stakeholders in arriving at consensus on an accreditation pathway, it was agreed (with key stakeholders, Dept of Agriculture and WRC) that structuring of the curricula and the materials development process could continue without further delay in line with the Organising Framework of the QCTO. This resolution was later reversed.

2.5 Accreditation Uncertainties

Subsequent to the third workshop and the apparent clarity of direction that emerged, the Department of Agriculture wrote the WRC in August 2008 stating that the accreditation pathway was not acceptable to them and that a unit-standards based approach had to be adopted for them to support and use the learning guides. It is a WRC priority that the research work that is funded by it, in this case the learning guides, must be responsive to the needs of Government, particularly the Department of Agriculture and the Agricultural Colleges. The team therefore stopped all work and attempted again to resolve the accreditation and qualification issue – without which relevance and usefulness would have been potentially compromised.

Numerous subsequent meetings / discussions between the team, WRC (Dr Sanewe), AgriSETA (Johan Engelbrecht), AgriSETA specialist accreditation consultants (Herman van

Deventer and Beatrice Enslin) and the NDA showed there were a number of options as to how the learning materials might be positioned within the Organising Framework of Occupations and/or developed in line with Unit Standards.

To maximise the flexibility and usefulness of the materials in future, the team took the approach of writing the materials in such a way that it would be able to comply with both frameworks so that the materials would be relevant whichever pathway was selected at a later stage.

2.6 Relevant Unit Standards and Implications in 2009 (start of writing)

The guides were developed to final draft stage during 2009 and were piloted in the first semester of 2010. The final decision at the time of developing the content (end 2008) therefore had a major bearing on how the materials were structured and what content was included. This is set out below.

Facilitation Guide: The need for and purpose of the facilitation guide was most appropriately suited to a number of unit standards which were linked to the SAQA Qualification ID 59409 which is the National Certificate in Agricultural Extension, NQF Level 5.

The Unit Standards for this qualification were developed during 2008 and were published on the SAQA website in December 2008 and provided sufficient basis on which to structure the Facilitation Guide. This complies with the Department of Agriculture position that Unit Standards had to be used for development of materials, and the selection of these two Unit Standards totalled 15 credits, which comprised about half the units required for a QCTO 'short course'. The other 15 credits would be made up by the technical manual – and would be suitable (as a combined set of facilitation and technical) for registration with the QCTO, should that eventuality transpire.

The Unit Standards on which the Facilitation Manual was finally based are core courses in the Qualification: National Certificate for Agricultural Extension (SAQA ID 59409).
The Unit Standards used were:

- US 252476 (10 credits) Develop and implement an extension programme plan
- US 252474 (5 credits) Implement strategies for behaviour change

Where the learning package is used in the National Certificate, the facilitation component will be compulsory because these are core US'.

Technical Guide:
There have been no relevant unit standards for water harvesting and conservation linked to the technical guide at a suitable NQF level (4, 5 or 6 on the newer 10 tier structure) during the duration of the assignment. There are only two water harvesting Unit Standards, which are both at NQF 2 leaving a void of usable unit standards for this assignment. In the absence of unit standards and a qualification to provide context, the outline of the Technical Guide has been prepared based on a practical common sense approach of what is needed to teach the technical elements of rainwater harvesting, at

NQF level 5 (on the new 10 tier structure). This approach is pragmatic and provided a basis for progress of the assignment. Suitability to the QCTO is through the avenue of a 30 credit short course. The Technical Manual was therefore set at 15 credits to complement the Facilitation Manual 15 credits, totalling more than the required minimum of 25 credits for a QCTO short course. It must be noted that a suitable QCTO 'specialisation' would have to be registered at the time of formalising accreditation (after this assignment).

2.7 Implications as at Project Conclusion (March 2011)

Interviews were conducted with AgriSETA in November 2010 to finally assess the accreditation situation in relation the nearly completed materials package. The discussion and implications (in boxes) are presented below.

The discussion with AgriSETA showed that the accreditation context remains uncertain and complex and is still cause for substantial debate even between specialists who work with the South African Qualifications Authority (SAQA), the Quality Council for Trade and Occupations (QCTO) and the SETAs. The interview with AgriSETA and a specialist AgriSETA advisor raised some important new developments in relation to SAQA and the QCTO.

1. AgriSETA stated that the current position is that it is no longer advisable to develop or propose new Unit Standards as SAQA has stopped that process.

> *The Facilitation Manual was based on Unit Standards which were largely relevant and useful in terms of content and scope. Because of this, no content was included just to comply with a Unit Standard outcome and there is therefore no negative implication for the Facilitation Manual. It has been stated earlier that there were no relevant Unit Standards for the Technical Manual and the resolution during 2009 discussions with the WRC was that the team would develop the content based on an informed assessment of need, and develop draft Unit Standard(s) to address this gap, if needed. There is now no reason to develop a draft Unit Standard as organisations are likely to use the materials when these are registered under the QCTO as a short course.*

2. The Skills Development Programmes that were historically based on Unit Standards are to be replaced with occupationally directed short courses, of which the credit value might be more rigid (i.e. between 25 and 30 credits equating to approximately 250 and 300 notional hours of learning).

> *The Facilitation and Technical Manuals are developed to comprise 15 credits each, totalling 30 credits together. They were developed as a complementary and integrated set of materials in terms of content and how they will be applied in the field. These two facts mean that the set is ideally suited as an occupationally directed short course totalling 30 credits.*

3. The QCTO, which was launched in February 2010, now carries the responsibility for accrediting Service Providers to conduct occupationally directed training in relation to QCTO defined occupations and QCTO defined specializations (within occupations) – both existing and new. The accreditation process covers the Service Provider's whole set of competencies, including staffing, facilities and their existing training materials. The training materials themselves are registered *(note that the correct terminology is not 'accredited')* with the relevant SETA, which is AgriSETA in this case. New training materials, to be used by an accredited Service Provider, need to be submitted to the SETA for registration.

> *Service providers are market-driven or Government funded entities. If there is a market demand for the occupationally directed short course then it seems highly likely suitable organisations would respond by registering and offering the occupationally directed short course. If the Government provides funding to achieve strategic WH&C targets which are currently part of the National Agricultural 5 Year Plan set by Government, this would provide motivation to a service provider to run the course. It follows then, that if the WRC wants to see the materials used, it would be advantageous to lobby the Department of Agriculture to allocate funding for materials to be disseminated to AgriSETA registered Service Providers, and / or provide bursaries for Government employees to take the WH&C short course, providing a market-driven motivation for the Service Providers to run the course.*

4. In order for an Accredited Service Provider to offer training, the course has to be linked to either a QCTO registered occupation, or a QCTO registered specialization. If none exists then an occupation or specialization must be registered with the QCTO.

> *It was documented in the project workshops conducted in 2008, that an existing or new QCTO specialisation (agricultural development officer or similar) is a suitable 'home' for the WH&C content. This needs to be confirmed within the current QCTO framework, and the specialisation needs to be registered if an existing suitable specialisation is not already in place with the QCTO.*

5. The Occupationally Directed courses will have a summary curriculum attached and will comprise three components: a knowledge component, a practical component and a workplace component which are summed to arrive at the total hours of learning.

> *The piloting process at UKZN comprised the equivalent of a knowledge component and a practical component. If the materials are to be used as an occupationally directed short course then the workplace component will need some attention. It follows from the discussion on registration of a suitable QCTO specialisation, that the workplace component would be relatively easy to accommodate as part of the occupationally directed short course if taken by employees in the agricultural sector – as their existing workplace would cover that requirement.*

6. The Agricultural Colleges are accredited to offer a specific qualification with set curricula and are allowed up to 30% variation on that approved content. At their discretion they may use any materials as resources for these courses, such as the comprehensive learning package.

   Government funding is available for short courses that are in fact needed in the agricultural and rural development sector, and where these meet Government objectives. In such cases, AgriSETA will fund such courses.

This presents no deviation from the current or past status in relation to HET and FET organisations having delegated authority to compile appropriate materials to meet curricula requirements. Thus, any college is free to use the WH&C materials as reference material or course material in whatever way they consider appropriate.

3 PILOTING OF THE LEARNING MATERIALS

3.1 Contract Requirements in regard to Piloting

The piloting of the materials was intended to "review and provide input to the finalisation of the material". Two possibilities for the piloting were considered; piloting in an existing organisations, or if not be possible, an independently funded course would have been conducted in collaboration with an NGO or similar organisation. Discussions with the University of KwaZulu-Natal, Centre for Adult Education showed a well-suited organisational structure, facilitator and learner interest in relation to a community development course that was already being offered in 2010. The piloting of the materials was embedded in this course in close collaboration with UKZN staff.

The piloting process was designed to maximise feedback by setting up a review process with feedback from:

- learners/ students
- facilitator/ trainer
- the project team
- UKZN (external examination of learning programme)

The piloting was largely financed by project funds, in the form of payment of fees for 12 learners, payment of the facilitator's fees and financial support to fieldwork and practicals that were undertaken.

In addition to the detailed piloting, there was regular liaison with the formal network of Agricultural Colleges, which is the Association of Principles of Agricultural Colleges (APAC). They were informed in writing as to the purpose and progress of the guide over a two year period and draft final materials were submitted for their review. College feedback is reported in a separate section of the report.

3.2 Answers sought from the Piloting Process

Discussions on piloting approach were held with a range of experienced educators, both on the team, at UKZN as well as an independent accreditation expert. While the actual process of accreditation was not part of this contract, it was important that the guide was developed with a clear sense of the likely accreditation pathway. The piloting needed to provide feedback from the perspective of:

a) the learners and
b) the facilitator who will be lecturing the course.

3.2.1 Feedback from Learners

The main feedback to be solicited from the learners was in relation to how understandable the guides were and the volume of material (length of course). The

issue of WH&C scope and relevance is not for the learners to really comment on and feedback on relevance will be obtained from the facilitator and the reviewer. Questions for review of the piloting process (facilitator and learners) included:

- Are diagrams clear?
- Is information pitched correctively for their level of education?
- Were the review questions, assignments and activities too difficult or too easy?
- Was it interesting (cross checked with assessment of the facilitator's approach as the learners might have found the content boring because the facilitator was found to be boring – as unlikely as this will be given the choice of the facilitator that has now been made (Mr Tim Houghton who has considerable experience in related subject matter.)
- Did they have enough time for the activities or were things rushed?

Weekly feedback was obtained from the facilitator and the students provided an evaluation at the end of each manual.

3.2.2 Feedback required from the Facilitator

The facilitator for the course had a working relationship with UKZN and some experience in small-scale agriculture. It was expected that the facilitator make routine notes at the end of each lesson, to record and provide constructive feedback to the materials development team.

Areas of information collection and feedback included:

- Information on actual lesson plans versus the suggested lesson plans outlined in the facilitators guides (e.g. were any of the envisaged activities scrapped completely)?
- What alternatives did the facilitator come up with and how could these be included in the final facilitators guide?
- Were diagrams and illustrated artwork clear to the facilitator and to the students?
- Was content at right level (NQF 5)?
- Was the amount of material in the course realistic – enough time or too rushed?
- Were activities realistic, relevant and practical
- Any knowledge that the learners needed that was missing from the guide?
- Suggestions for improvement on session by session basis?
- Ideas from the facilitator on other activities – what can be added?
- How easy was it to develop the course structure for the materials given the amount and the nature of the materials?
- How would the facilitator structure the lesson time (ideal structure if up to them completely i.e. once a week / few hours per day / every few days)? Would they have one short lesson per week and say longer lessons for practicals. Should practicals be after the course or during the course?

3.3 Research Instruments

Two research instruments were prepared and are shown in Appendix 3.

- Draft Group Evaluation Form
- Draft Individual Evaluation Form

The pilot course facilitator ensured that the learners filled in these forms at the end of each module; the Technical course concluded at the end of March 2010, and then the Facilitation course, which concluded in mid-June 2010. The detailed feedback reports are included in Appendix 4.

3.4 Summary of Feedback on Manuals

The information from the detailed weekly feedback reports has been consolidated and summarised in the tables below. The detailed weekly feedback reports are shown in Appendix 4.

This feedback was one of the main contributions to the final review and revision process of the current draft final manuals.

Other review inputs are included in the report appendices:
- Feedback from students (Appendix 5).
- External reviewers (Appendix 5)
- Workshop feedback from the agricultural college review process (Appendix 6)

All of the comments, suggestions and feedback were reviewed by the team and most of the suggested improvements and amendments were made. Additional changes recommended by the February 2010 WRC Reference Group Meeting were also addressed.

WHC TECHNICAL MANUAL SUMMARY OF PILOTING FEEDBACK			
Chapter	**Content**	**Activities (formal)**	**Activities (optional – presented in FAG under "Guidelines and Suggestions")**
1 Introduction to WHC	**Content (general)** • Phiri Maseko story and illustrations a good introduction to WHC **Language** • accessible and easy to understand **Manual** • well set out • diagrams are easy to understand **Other suggestions** • The facilitator used short energizers and fun activities to maintain energy levels and keep the group focused – a selection of energisers can be included in the FAG.	**1 Groupwork (20 mins)** • Additional time needed (30-40 minutes)	**Reading and discussing Phiri Maseko story** More than 30 minutes needed if this is done in class. **Brainstorm reasons for global water crisis** It is worth allocating time for this activity as these issues come up frequently during the course of the session/s. Alternatively, learners can begin a list ("Reasons for the Global Water Crisis") and then add to it as the session/s continue.

<table>
<tr>
<td>2 Water in the World</td>
<td>
Content (general)

Learners enjoyed the experiments (e.g. Activity 2) as they “help increase understanding”

Language

accessible and easy to understand

Manual

well set out
diagrams are easy to understand

Other suggestions

Useful to begin each lesson with a brief overview of the material to be covered.
Allocate time to review assignments or homework from the previous lesson.

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2 A drop in the bucket (20 mins)

Activity can be presented as is, with no changes to time or instructions.
Additional time is needed (45 minutes) <u>if</u> concepts such as volume, proportion, percentages, etc. are explained.
Additional time is needed if facilitators follow the Guidelines and Suggestions (G&S) for Activity 2, in which case the FAG should also make it clear that the activity comprises of three parts:

1. Student discussion and experimentation.
2. Facilitator demonstration.
3. Plenary discussion.

3 Map Work (20 mins)

More time is needed (40 mins).
Students were unfamiliar with maps and certain concepts pertaining to rainfall (e.g. mean annual precipitation).
The maps in the TM (Fig. 2.1 and 2.2) need to be in colour.
Students found map work “tedious” / involved too much detail.

4 Rainfall Research (2.5 hours)

This activity set as an assignment.
Student reports (in general) :

respondents were unable to provide accurate rainfall information
students have underdeveloped interview and reporting skills
reports indicated that students had either misunderstood the questions/concepts or failed to ask the questions accurately or failed to report accurately or all three
students did not adequately grasp the concepts covered in class (e.g. the concept of “average”, seasonality, etc.)
students were poor at comparing collected data with data from the maps
reflections on doing the activity were shallow and lacking in critical reflection

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Chapter	Content	Activities (formal)	Activities ("Guidelines and Suggestions")
		5 Water use in my WMA (30 mins) • Activity not done due to lack of time. • The maps are not legible (Fig. 2.4 and 2.5)	
		6 Groupwork (20 mins) • Activity straightforward but useful.	
3 Water in the Landscape		**7 Make your own terrarium (4 hours)** • The facilitator let students work in pairs so that they could sustain interest in a project with a partner until the end of the course. • The time needed to do the activity in class, with learners working in pairs, was 80 minutes. • The inclusion of the dish with water was unclear and can be omitted. • The facilitator adapted the instructions and feels that these worked well – the activity instructions should be changed to these adapted instructions. • A 2 liter plastic container should be used (glass jars, etc. can be omitted). • Students enjoyed the activity. • One student was "not permitted by custom to handle soil and seeds and participate in planting during her menstrual period"	
		8 Water Catchments (2 hours) • The facilitator found it useful to conduct this activity with the class at the learning organisation (as per FAG suggestion) before assigning it as a portfolio task.	
		9 Group Activity (30 mins) • Activity demonstrated water movement well.	

Chapter	Content	Activities (formal)	Activities ("Guidelines and Suggestions")
		10 Pollution (30 mins) • The activity was conducted as a class. • Students found it easy and interesting, particularly the effects of different pollutants on water. • Suggested that the TM includes an insert and picture that shows and discusses the environmental effects of one kind of pollution (e.g. a detergent) on water. • Suggested that the facilitator finds newspaper articles on the topic or sets a homework task along these lines (can be included in FAG).	
4 Soils	**Content (general)** • Mathematical/technical components are generally difficult for learners; some concepts would require remedial inputs for students to be able to grapple with them effectively. • Activities are realistic, relevant, and generally enjoyed by students. **Language** • Sentences are sometimes long and complicated. • Needs to be a strategy for students to tackle challenging bits rather than having to skip them. **Other suggestions** • A pedagogical tool (in the form of an activity called "unanswered questions") gives learners the chance to get clarity on issues and answers to questions, and thus helps bring the class "up to	**11 Experiment (30 mins)** • Useful and interesting activity which students enjoyed. • Suggested that soils are also examined with magnifying glasses. • Appropriate working surfaces needed if activity conducted indoors (to mention in FAG).	**Examine soil samples with a magnifying glass** A useful activity – can be done with all soil-related activities, particularly the soil used in the terrariums.
		12 Textural Triangle (20 mins) • Activity too difficult for the students. • Suggested that it is left out of the manual.	**Watch the Rainwater Harvesting DVD (WRC/Umhlaba)** DVD was a very useful learning tool which students enjoyed. Recommended that it is included in the formal lesson structure.
		13 Soil Profile (4 hours) • Suggested that students begin the activity by exploring reasons for digging soil pits. • Groups staggered their pits at different heights, which enabled them to see how the layer of topsoil deepened towards the bottom of the site. • The activity led to useful discussions around soil erosion and runoff.	**Examine surroundings for soil erosion** Useful activity for observing and discussion different types of soil erosion. Provided excellent opportunity to make links with content previously covered (such as the 8 principles of WHC, water catchments, groundwater, soil horizons and soil structure, etc.).
		14 Experiment (10 mins) • A simple, short but effective activity. • Helped clarify concepts such as saturation, capacity, wilting point, etc.	

	speed". • Prior scoping of the practical site, and planning where and how activities would be conducted proved invaluable and enabled the group to set up and begin activities without delay. • Provision needs to be made for an alternative work space in the event of rain. • Unless students have easy access to their prac sites (after hours), they will not be able to fulfill the time obligations for all activities. • Assessment Rubric 3 needs space for comments.	**15 Group Activity (20 mins)** • A simple activity which students really enjoyed. • Discussions were useful in leading the group towards thinking about what kinds of soil are conducive for planting and how certain soil structures can lead to erosion.	
5 Systems	**Other suggestions** • An alternative technique for determining aspect is included in the manual (one is provided by the Tim).	**16 Analyse a Farm System (2 hours)** • A field trip to visit the farm of Baba Maphumulo (a small-scale farmer) was conducted over a morning, so more time was required for this activity. • Students enjoyed the visit and found it useful and interesting for various reasons, including the following: – they got to observe the preparation of seedbeds – they learned about the dangers of pesticides and herbicides – they learned how to propagate and grow bananas and amadumbe – they examined an underground runoff storage tank and observed other WHC methods (diversion ditches and swales) being practiced • Student feedback was that they "felt better able to understand the course because of what they learned and better able to share what they had learned with others in the future"	**Analyse an Ecosystem** Activity provided an opportunity to link previous learning with the current activity (e.g. the impact of runoff, erosion and pollution on the ecosystem).

6 WHC Planning	**Content** • The formula for calculating slope in the TM should be changed from: *Percentage slope = rise over run times 100* to *Percentage slope = rise over run times 100%*.	**17 A-Frames (4 hours)** • The lecturer decided it was best to have all materials ready. • Students followed the instructions in the manual; the lecturer was available to provide support and guidance when absolutely necessary. • Mistakes came from not reading the instructions carefully enough. • Important to emphasize the possibility of human error and the importance of double-checking measurements regardless of which instrument is used.	
		18 Line Levels (4 hours) • The lecturer decided it was best and easiest to have all materials ready. • Students followed the instructions in the manual; the lecturer was available to provide support and guidance when absolutely necessary. • Mistakes came from not reading the instructions carefully enough. • Important to emphasize the possibility of human error and the importance of double-checking measurements regardless of which is used. • Students struggled to measure slope using a line level, and to do the calculation.	

7 WHC Methods	**Content (general)** • The TM should make it clear that A-frames and line levels are not particularly accurate measuring instruments, but that both instruments are *accurate enough* as long as measurements are done with due diligence and are checked. (Inaccurate readings were from carelessness). • The importance of **planning** needs to be emphasized, as this was a huge and ongoing problem for students. **Other suggestions** • The lecturer has recommended a methodology which facilitators can use with students, particularly for activities. This 5-step methodological approach can be introduced and outlined in the FAG, and certain activities can be adapted so that they are more in line with this approach. **Site visits** • Site visits are very valuable, giving students exposure to the methods and application of WHC techniques, but they are time-consuming and expensive, esp. if the site is far from the campus. The value of site visits should be weighed against these factors, and against the importance of students learning by doing (implementing methods). • The classroom, prac site/s and sites for visits should as far as possible be in close proximity.	**19 Trench Beds (30 hours)** • The lecturer amended notes from the FAG into a handout/instruction sheet for students. • Students had to work on the project using the manual as a guideline. • Students spent too little time planning – the importance of planning needs to be emphasized, although allowing students to make the mistake of not planning sufficiently is also important because of what they learn from this. • Groups became competitive with each other, which generally impacted negatively on their work. • Some groups were obsessed with "doing it by the book", which prevented them from improvising (e.g. using a spade to measure) – it is important for the facilitator to encourage students to critically evaluate what they are doing. • Students didn't have sufficient tools to cut mulch. • Students enjoyed: – working in teams – taking responsibility for working out tasks and allocating different responsibilities to group members – working outdoors – learning something useful – learning practically	

7 WHC Methods		**20 Stone Bunds (12 hours)** • Due to rain and few rocks in the area, students marked out contours and then discussed how they would construct the bund. **21 Tied Ridges and Swales (18 hours)** • Students constructed swales (for assignment purposes). • The lecturer provided the students with a handout/instruction sheet. • Students then had to work on the project using the manual as a guideline. • Students spent too little time planning, leading to mistakes. **22 Fertility Pit (15 hours)** • The activity went well although again, students spent too little time planning which led to mistakes. **Planning has become a key area of focus** for these students. **23 Roofwater Harvesting (2 hours)** • The lecturer linked this activity to earlier content (research/activities on local rainfall patterns) – **links across chapters and concepts should be made more explicit in the TM**. • The lecturer has provided a useful lesson outline for understanding and calculating roofwater runoff. This can be included in the FAG.	**Field trip to Dovehouse Organics, Howick** This field trip was valuable for students despite organizational problems which resulted in a loss of time. Students observed a range of methods and concepts which they have learned about throughout the course.

WHC FACILITATION MANUAL SUMMARY OF PILOTING FEEDBACK			
Chapter	**Content**	**Activities (formal)**	**Activities (optional – presented in FAG under "Guidelines and Suggestions")**
1 Introduction to WHC Facilitation	**Manual** • A complete table of contents at the beginning of the manual would be useful. **General** • Students enjoyed doing some class work after all the practicals done in the previous module.	**1 What is Progress? (30 mins)** • Students found the activity interesting.	**What is a Facilitator?** The discussion was useful as a refresher for these students, who have had similar discussions in previous courses.
		2 More on Progress (30 mins) • Students struggled to understand the concept of "the idea of Progress", so additional time was needed to grapple with this concept. • Students battled to understand the meaning of "values". A discussion of "Ubuntu" as a value system helped with this. • The rest of the activity went well and was enjoyed.	**Discuss the impact of the "pursuit of progress".** Students battled to understand this concept. An additional activity is needed to help students clarify their understanding.
		3 The Meatrix (40 mins) • This was set as a portfolio submission.	**Discuss TOT vs. Participatory Approaches** The discussion was useful as a recap for these particular students, who are already familiar with these approaches.
2 PTID – A Framework for Facilitation & Action		**4 Assess your Participation (20 mins)** • More time was needed for the activity as it currently stands (40 minutes)	**Indigenous/local knowledge** The lecturer brought a range of indigenous and exotic plants and vegetables to class. Learners were asked to classify and them. This was a very useful discussion – perhaps could be included as a formal activity?
		5 Local Knowledge (40 mins) • Learners enjoyed this activity (they had to complete it on their own, so the lecturer could not provide further comment).	

3 Facilitation Skills	**Content** • Johari's Window and discussion fun and interesting. • Facilitation, cultural diversity and stereotyping were discussed in class, but it appears the activities were not conducted.	**6 What is my Culture? (20 mins)** • –	**Discussion: facilitation, cultural diversity and stereotyping** A very useful discussion for exploring the diversity of situations that a PTD facilitator needs to be sensitive to. Examples from this discussion can be included in FM.
		7 Brainstorm (10 mins) • –	**Brainstorm ways of developing self-knowledge** Straightforward brainstorm from which the idea of conducting a "personality SWOT analysis" emerged. Suggested that this is included in the course.
		8 Stereotypes – Groupwork (20 mins) and Individual work (20 mins) • –	
		9 Exploring Attitudes (30 mins) • This activity involved individual writing, which made it fairly novel for students. • Students found it useful, as well as the discussion afterwards.	
		10 What values have shaped my life? (10 mins) • This activity was adapted (along with Activity 11 and 14) into an activity on active listening called "Listening Circles", which went very well. To join activities and include in FM, based on Tim's notes.	
		11 Value Analysis (15 mins) • This activity was adapted (along with Activity 10 and 14) into an activity on active listening called "Listening Circles", which went very well. To join activities and include in FM, based on Tim's notes.	
		12 Knowledge-sharing (20 mins) • A straightforward activity. • Some students confused between implicit and explicit knowledge (is that distinction important?).	
		13 Body Language (10 mins) • A straightforward activity that was humorous.	

		• A good opportunity to make links to prejudice and cultural diversity, and the importance of facilitators being sensitive to these issues.	
		14 What makes a good listener? (10 mins) • This activity was adapted (along with Activity 10 and 11) into an activity on active listening called "Listening Circles", which went very well. To join activities and include in FM, based on Tim's notes.	
		15 Groupwork (1.5 hours) • Suggested that this is called "Speaking skills". • The activity was done before the content on speaking skills (which can be suggested in the FAG, as this format worked well). • The lecturer has provided some additional activity guidelines which can be added. • The activity also offered the chance to revisit Johari's Window.	
		16 Tell me about yourself… (30 mins) • The group ran out of time so this was not conducted in class.	

Chapter	Content	Activities (formal)	Activities (optional – presented in FAG under "Guidelines and Suggestions")
3 Facilitation Skills (cont)	**Content (general)** • The time allocation for this chapter and its related lessons needs to be looked at; particularly in relation to activities 17 and 18 (i.e. more time is needed). • Discussions around how to engage quiet people, high talkers and side discussions was left until after Activities 17 and 18 were conducted, which worked well (can recommend in FAG). • Students generally appreciated the opportunity to give presentations and demonstrations, and found the detailed individual feedback on their presentations and demonstrations very useful.	**17 Individual Presentation (2.5 hours)** • Presentations generally went well, although many students had weak introductions and conclusions. • The usefulness/importance of having a prop or visual/manual around which to organize a presentation was discussed. **18 Individual Demonstration (2.5 hours)** • Demonstrations generally went well as students showed more confidence in the practical application of methods rather than their oral descriptions. • Students were weak in setting the context for their demonstrations (i.e. what is its purpose? why is it done?, etc.) – this problem was discussed with the students. • Many students did not engage with the group fully during the demonstrations. Important to talk about the importance of engaging the interest of the group early on in the process. **19 Allow Me to Introduce Myself… (1 hour)** • Students enjoyed this activity and generally did it well. It provided them with a good opportunity to improve on their presentation skills and obtain personal feedback.	**Additional activity recommended by facilitator** • Tim developed a detailed activity on conflict resolution which he conducted with students, and which can be included in the manual.

Chapter	Content	Activities (formal)	Activities (optional – presented in FAG under "Guidelines and Suggestions")
4 Enter the Community and Identify Opportunities	**Content (general)** • Students were encouraged to set up their garden assessment (Activity 23) with local farmers. • Students questioned not engaging with local people when conducting activities 21 and 22, even though they understood that they needed to practice the methods.	**20 Internet Research (2 hours)** • This activity went way overtime, mainly because students were not used to doing internet research. More experienced students assisted less experienced ones, and additional input and advice was provided by the facilitator and an internet expert who was asked to assist with this task. • Tim developed an assessment rubric designed to give less experienced students the same opportunity to score marks as those who were more experienced. This rubric can be included in the FAG. **21 Make a Resource Map (1.5-2 hours)** • While students still generally struggle to plan sufficiently, there was evidence of improved planning for this activity (e.g. they allocated tasks to members in advance). • Most students worked hard at this task, enjoyed it and completed it successfully. **22 Do a Transect Walk (2-3 hours)** • The activity was conducted during the heat of the day, and some students complained of being tired, although others really enjoyed the walk. • Some students put good effort into recording discussions and observations during the walk. However, because time ran out, students were asked to complete their diagrams at home.	

Chapter	Content	Activities (formal)	Activities (optional – presented in FAG under "Guidelines and Suggestions")
5 Assess and Plan	**General** • Students enjoyed engaging with local people around WHC methods and issues and found it provided them with good experience. • Some students battled to do the calculation for the surface area of a rondavel as they didn't understand the formula. • Reports for Activity 23 were, without exception, "…detailed and comprehensive and demonstrated clearly that students had grasped the concept of a site assessment".	**23 A WHC Plan for a Garden (3 hours)** • The length of time needed to conduct assessments varied between groups. • The activity was very successful and enjoyed by the students, who found it useful and challenging and said it felt "real" to assess a site for its WHC potential and then help the owner to plan WHC interventions. • The activity demonstrated how mutual learning can take place between farmers and extension officers/WHC workers.	**Plenary discussion re. relevance of local vs. outside knowledge; experience of and lessons from communal gardening** • Activity was straightforward and built on previous discussions with students. **Illustration of site assessment with mind-mapping** • This activity was very successful and participatory, and each student joined in the discussion. • Students commented on the usefulness of mind-mapping.

Chapter	Content	Activities (formal)	Activities (optional – presented in FAG under "Guidelines and Suggestions")
6 Act and Observe	**General** • The facilitator would have liked more time to go through the content with students, and would have liked to provide them with the chance to do some practical facilitation of the various activities in a real context.	**24 Monitor your Progress (1.5 hours)** • This activity was introduced and set for homework. • Tim recommends that Activity 24 should be included in a summative assessment portfolio in future (although it was not done for this course). Students should be guided through the activity before it is set.	**Review PTID Stages and Intro to M&E** • The PTID stages were reviewed and linked to the coursework, and monitoring and evaluation was introduced as a systematic way of observing and reflecting.
			Activities: **What to observe?** **How to measure?** **Measuring indicators** • Students were given an incomplete copy of Tables 6.1 to 6.4 and each one was completed in plenary as content was introduced and discussed.
			Activity: Record-Keeping • The activity went quickly and students responded with critical questioning.

Chapter	Content	Activities (formal)	Activities (optional – presented in FAG under "Guidelines and Suggestions")
7 Tools for PTID	**Content** • Working through the Scoring and Ranking content was "one of the highlights of the facilitation module". The facilitator prepared some simple blank matrices for students to work with and asked them to come up with matrices for scoring and ranking various things (e.g. brands of cellphones, models of cars, etc.). • The sections on brainstorming and report-writing were covered, but could have been done so in more detail if time permitted.		
	Other general feedback regarding WHC Facilitation Manual and Module: • Students mostly agreed that the language level of the manual was appropriate. • Some of the jargon was difficult to understand and simple footnotes / explanations could be included. It was suggested that simple word games are included to help familiarize students with jargon. • Some students said they would like to do more practical work in the Facilitation Module (this feedback was given near the beginning of the Fac Module). • Some students felt the review questions adopted a conservative approach to learning, although the facilitator (Tim) found them useful and would continue to include them. • Students suggested that the manual covers be reinforced with durable plastic. • Some students wanted a dedicated WHC plot on the university farm that was safer, closer, involved less travel, was properly fenced, and allowed them to visit outside of designated hours. • Students found the opportunities to present to their peers and demonstrate WHC methods very valuable. • Students disliked having to do Review Questions. • Students wanted more interaction with the community when doing the facilitation module.		

4 CONSULTATION AND FEEDBACK PROCESS WITH THE AGRICULTURAL COLLEGES

This section of the report documents a final round of consultations during August and September 2010 with the agricultural colleges to provide additional guidance on:

- Accreditation of the learning package,
- Publishing and marketing of the final learning package

The aim of the interaction was to ensure maximum relevance and uptake of the WH&C content by existing learning organisations.

Full transcripts of the college interviews are shown in Appendix 6.

4.1 Key questions

The round of consultation with AgriSETA and the Agricultural Colleges aimed to answer a number of questions in relation to the draft set of learning materials as set out below:

1. **Is the WH&C content relevant to perceived learning needs?** The materials were developed on the basis of the Terms of Reference, in consultation with the Reference Group, stakeholders (early project workshops) and AgriSETA and it was deemed important to get feedback on the relevance and usefulness of the draft final product from the Colleges. The question was explored in general in relation to the learner base, both full-time and part-time across FET and HET levels. Specific detail relating to the technical and facilitation content, vis-a-vis readability, sequence and relevance of the learning materials were thoroughly addressed in the piloting process and these detailed content issues were not addressed in the college interactions. It was clear from phone discussions that no-one at the colleges had the personnel available to consider the materials at that level of detail.

2. **Is the accreditation structure of the materials applicable?** The accreditation framework was set after extensive discussion with key stakeholders during Year 1 and 2 of the assignment. The decisions taken were significantly influenced by a letter from the National Department of Agriculture to the Water Research Commission in relation to the project. This letter specified the essential need for a Unit Standards based WH&C course although the general consensus of stakeholders suggested an occupationally directed course would be more relevant for the content and the future of learning needs. As a result of the directive from the Department of Agriculture, a Unit Standard based course was developed for the facilitation manual because appropriate Unit Standards were in fact available. The complete absence of Unit Standards at NQF 5/6 for the technical manual however, resulted in compilation of the technical manual based on expected learning needs. The discussions aimed to understand their general curricula structure, scope of qualifications, skills programmes and short courses that were offered. This would give insight into how the materials might be used; as core modules or electives, or as

reference material for existing qualifications and courses which are offered at the colleges.

3. **What support would be needed to ensure integration of the WH&C content into existing curricula?** Previous stakeholder discussions had shown that resource availability to review curricula and integrate water harvesting content into existing courses was limited. A 2009 survey of curricula in the colleges showed that many of these had not been updated for some time and were outdated (pers comm, Beatrice Enslin, Feb 2010). Given that the objective of producing the WH&C training materials is to disseminate and use these as widely as possible, it is important for clear recommendations to be made as to how the Water Research Commission or the National Department of Agriculture might address the issue of integrating the WH&C materials into existing curricula.

4. **What support would be needed to upskill lecturers/facilitators to be able to present WH&C modules?** A sound understanding of WH&C on the part of lecturing / facilitation staff is a necessary precursor to effective skills transfer to learners at the organisations. The field of WH&C in South Africa is not widely known and is even less well understood. General discussions show that many people assume the subject is limited to catching rainwater from roofs and storing it in tanks. The range of methods addressed in the manuals is wide, both in scale and in the type of application and a degree of lecturer training seems essential to achieve meaningful transfer of knowledge to learners within the colleges. In a related facilitation issue, the 2009 review of college curricula (pers comm, Beatrice Enslin, Feb 2010) showed that the teaching style at the colleges is typically old-fashioned and hierarchical (termed 'chalk and talk') and is fundamentally opposite to the participative learning approach embodied in the facilitation manual which responds to the Unit Standard requirement of Participatory Technology and Innovation Development (PTID). This approach (PTID) is wholly supported as an educational and development facilitation approach and warrants effort to ensure proper implementation.

4.2 Agricultural College Consultation Process

Introduction of materials to the Colleges

The learning materials package was introduced to the Association of Principals of Agricultural Colleges (APAC) in 2008 and a progress letter was sent to APAC in 2009. An overview of the Draft Materials Package was presented to APAC in February 2010. APAC is the coordinating forum of agricultural college heads that meets bi-monthly. The purpose of the presentation was to introduce the materials and to motivate to the College Heads that they should expect to receive copies of the final draft materials package for their review and feedback to the team in the second quarter of 2010.

Draft Materials Sent

The full set of the draft WH&C learning material package was sent to each of the agricultural colleges in May 2010 by registered mail, to the addresses provided by the APAC Chairperson, Mr Marius Paulse of Elsenburg College (Cape Agricultural Training Institute). A covering letter set out the purpose of the learning materials and the reason

why they were sent to the colleges. A detailed project report describing the content and purpose of the materials development package was also attached to the letter and materials for those who might be keen to gain further background. Two of the sets were returned to the sender; namely Cedara College and Owen Sithole College and one set was delivered but went missing (Lowveld College). These were then resent by courier to revised addresses after phone contact confirmed the delivery address. This process established that all of the colleges had confirmed delivery of the materials either by registered mail or by courier, with a covering letter addressed to the College Principal.

E-mail reminder and invite to a Materials Review Workshop:
An e-mail was sent to all of the college heads in July 2010, reminding them of the packages that were sent by mail/courier and inviting them to a workshop in Gauteng where feedback would be invited. E-mail addresses were verified for each college head by phone in advance of sending the e-mail. Only two colleges responded to the e-mail; Glen was unable to send anyone and Elsenburg planned to send the head of the FET section. Thus only Elsenburg appeared able and willing to respond to the invite by responding, and by assigning a senior person to attend.

This general lack of response to the invitation was followed by a round of phone calls and it transpired that while all of the colleges had received the e-mail invitation, two (Lowveld and Cedara) could not locate the materials packages sent by registered mail/courier. In general the colleges did not have the financial resources to send representatives to a workshop in Gauteng. Potchefstroom was the only college who communicated a lack of interest in the WH&C content and materials, primarily because they felt the NQF level was inappropriate to them, but could be used at their sister FET college, Taung. *(It is noted, as shown in the discussion on interview feedback in Section 3, that all of the other colleges that were interviewed responded that the materials were valuable and useful and the lack of response to the invitation to the workshop should not be confused with a lack of interest in the WH&C materials themselves.)*

After consideration of options to get suitable feedback to answer the main questions of interest set out above, it was decided to proceed with a telephonic interview with key people at each College and to undertake senior team-member visits to selected colleges to gain further insight.

The interview process and visits to the selected colleges was conducted during September and early October 2010 as shown in Table 4.1. The colleges that were selected for visits were based on travel practicalities and a spread of HET and FET focus.

Table 4.1: College Interviews and Physical Visits

College Name	College Principal	Focus	Phone Interview	Physical visit
Cedara	Dr Harry Swatson	HET/FET	No	Yes
Elsenburg	Marius Paulse	HET / FET	No	Yes
Fort Cox	Mr MG Araia	FET	No	Yes
Glen	Mr Jan Snyman	FET	Yes	No
Grootfontein	Mr Strydom Schoonraad	FET	Yes	No
Lowveld	Mr GO Xaba	HET / FET	Yes	No
Madzivhandila	Ms MC Tshisikule	FET	No	No
Owen Sithole	Mr S Nompozolo	FET	PD	No
Potchefstroom	Mr Richard Serage	HET	Yes	No
Taung	Abrie van Heerden	FET	PD	No
Tompi Seleka	MR MS Mhinga	FET	Yes	No
Tsolo	Mr HM Ntsabo	FET	PD	No

HET – Higher Education and Training (degrees, diplomas, higher diplomas)
FET – Further Education and Training (Certificates, short courses, skills dev programmes)
PD – phone discussion held with Principal but no specific feedback was obtained as the College Head, while aware of the guides, was not familiar with the content in detail.

The phone interviews yielded useful feedback and the interview transcriptions are included in Appendix 6. A response from Madzivhandila College (Thoyoyondu) could not be procured as there was no response to numerous phone calls and messages in relation the phone survey. Taung, Owen Sithole and Tsolo colleges acknowledged receipt of the guides but phone interview feedback was deferred to others within the college, who were pursued for a response, but this was not forthcoming. Given that the survey aimed to identify general issues in relation to the finalisation of the materials development package, the set of seven detailed responses obtained is considered sufficient to provide confidence in relation the key questions raised.

4.3 Findings from the College Interviews

Is the WH&C content relevant to perceived learning needs?

The response from the Colleges was significantly positive and enthusiastic in relation to the WH&C subject matter, both the technical and facilitation manuals. However, relevance of the materials seems primarily to be at FET level and not HET level. Elsenburg, Grootfontein, Fort Cox, Cedara and Lowveld were all very enthusiastic about the materials; they iterated the importance of WH&C and rated the material as very useful and relevant. Grootfontein highlighted their focus on arid areas and small livestock and the critical need for more awareness around agricultural water in relation to rangelands management. Elsenburg, who have a wide learner base, listed a number of modules where they are already planning to incorporate content from the drafts they have in hand. The Fort Cox respondent was well informed about WH&C technology and stressed the usefulness and need for courses to be structured around the package and invited the team to make a presentation as soon as possible to raise awareness with his lecturers.

Lowveld, was enthusiastic that the WH&C materials raised the profile of WH&C practices and that the materials provide specific solutions to a priority agricultural issue given climate change. Cedara, where a physical visit was made, similarly stressed relevance and intent on using the materials as soon as they are available. Cedara were alone in their interest in using the materials at HET level.

The only college that was interviewed, and which was not interested in the materials was Potchefstroom, whose principal said that they thought they were sent the materials by mistake as these were at NQF 5 and they did not teach at that level. He did confirm that he had received the covering letter explaining why they were sent to him (see Appendix A) but felt he had no use for them and referred the interviewer to the Taung FET College which has links to Potchefstroom. The Taung College interview was vague as the Principal had handed the materials over to a colleague and had not had feedback. Follow-up calls to the colleague did not provide insight as she did not have any clear view on their usefulness.

SUMMARY – The general response from the colleges with an FET focus was very positive in terms of relevance and potential usefulness. It seems that the materials will have limited use within the HET colleges although Cedara specifically expressed interest. The reason for the FET focus is that the NQF level of the materials at level 5 is not appropriate for Diploma courses and higher (set at NQF 6 and higher).

What support would be needed to ensure integration of the WH&C content into existing curricula?

The interviews with the Colleges showed that none have the capacity to address curricula revision or curricula formulation issues with any rigor. While most of the colleges indicated they were keen to incorporate selected content from the guides into a range of existing modules across NQF levels from 2 to 5, all of the colleges made it clear that they definitely require support in updating curricula and course content. Grootfontein College for example has not had a lecturer who deals with agricultural water for more than 2 years as the position has been vacant. Similarly, the Elsenburg lecturer who deals with irrigation is not an irrigation or agricultural water specialist, but has substantial practical knowledge that covers the subject area. WH&C is a relatively new subject in South Africa and support in incorporating WH&C content into existing modules, as well as developing new curricula is clearly needed.

Furthermore, it seems unlikely that any college would go to the trouble of registering an occupationally directed short course (25-30 credits) for WH&C if the QCTO specialisation is not yet identified and registered. If the specialisation was registered, and the short course curricula description was completed, then the colleges are more likely to present the course.

4.4 What support would be needed to upskill lecturers/facilitators to be able to present WH&C modules?

The phone interviews and in-person discussions with the colleges showed that there is limited knowledge around WH&C on the part of lecturers. In order to be able to present a course on WH&C and participatory extension approaches there was an articulated response that the materials must be introduced in the form of a Training of Trainers (TOT) course. Elsenburg indicated that they would arrange for such a course to take place at the start of the year before course-work begins and would be able to set aside 3 days for this activity – but a longer TOT course would be difficult. The TOT would aim to sensitise lecturers to the technical WH&C content and the participatory technology and innovation development (PTID) from the facilitation module.

Fort Cox similarly stated that a training of trainers is essential if the guides are to be used with any effect as the WH&C and PTID content is so new – both the technical and the facilitation content. Cedara welcomed the possibility of a course for lecturers and saw this as a necessary step – one they are keen to make sooner than later. Other colleges interviewed responded positively (with the exception of Potchefstroom who alone saw no use of the guides to themselves). It is concluded that training of college facilitators is a necessary pre-cursor to successful integration of materials into the curricula.

Introducing WH&C through a course for lecturers at the Colleges presents an opportunity to challenge and change some of the hierarchical teacher-student styles which appear to still prevail in the colleges. Discussion on educational styles in visits to Elsenburg, Fort Cox and Cedara elicited direct responses that many of the lecturers still adopted older teaching methods as this is how they were taught to teach. While there will need to be some conventional Training of Trainers in the delivery of a 3-day course, it is possible and advantageous to use the opportunity to demonstrate how to transfer content using more context-appropriate methods and generate understanding of learner-centred, experiential learning. This is the very substance of the whole facilitation module and if the 'lecturers' are unable to make a shift to being 'facilitators' then the facilitation course content is potentially undermined.

While a five-day course would allow a more solid introduction to the materials and the approaches, a three-day workshop has been developed in response to the likely practical constraints that the colleges will face in allocating lecturer/facilitator time. The outline course is shown in Appendix 7 and would take a group of ten lecturers / facilitators at the colleges, or trainers from any other service provider, through the manuals and the methodologies – leaving them with a platform to commence WH&C course facilitation.

4.5 Conclusions on relevance and usefulness to the Agricultural Colleges

The process of consultation with key learning and accreditation organisations provided clear direction for finalising the WH&C Comprehensive Learning Package. The focus of discussions and interviews included: accreditation of the learning package, the submission of new Unit Standards, and publishing and marketing the final learning package. The consultation process confirmed that the material content is relevant, structured appropriately and more accurately targets its use in the educational marketplace.

The main conclusions from the consultation process are:

i) The response from the Colleges was generally positive and enthusiastic in relation to the WH&C subject matter. This applied to both the technical and facilitation manuals. Relevance of the materials (set at NQF 5/6) seems to be primarily at FET level and not HET level (NQF 6 and above), although Cedara indicated specific interest in including material into HET coursework.

ii) Seven of the twelve agricultural colleges were interviewed and, with the exception of one college (Potchefstroom), all showed marked interest in using the material both as reference material for a list of existing courses, and as stand-alone short courses that they would register and run.

iii) All of the interested colleges stated a clear need for assistance in restructuring curricula. Cedara, who were the only college that indicated interest at HET level, stated that they would be able to incorporate content into existing courses at HET level, but would require assistance at FET level. It is concluded then that future assistance to the colleges in regard to incorporating the materials successfully will focus on the FET courses. The curricula support would need to address the issue of using the WH&C materials as reference material for existing courses, and establishing a new short course / skills programme (at 30 credits) using the entire set of development materials.

iv) A number of colleges made a specific motivation for a training course for those lecturers/facilitators who would be responsible for facilitating WH&C courses in future as they did not have experience with WH&C and in many cases with more contemporary experiential learning processes on which the facilitation course is structured. All of the interested colleges expressed support for the motivation when asked. An outline of a 3-day course has been drafted by the team to respond to this need, and to give direction to whoever might be contracted to disseminate the learning package to the colleges. This is presented in Appendix 8.

v) The learning materials, as they have been developed, comprise 30 credits, which ties in well with the Quality Council for Trade and Occupations occupationally directed Short Courses. According to AgriSETA these are typically set at 25 – 30 credits. The two WH&C facilitation and technical courses were written as an integrated package and are ideally run as a single course (totalling 30 credits), which fits in well with the short course structure.

vi) The consultation process with the Agricultural Colleges showed that the draft guides are relevant to their understanding of accreditation frameworks, and have a place within the target learning organisations. Uptake of the materials can be readily facilitated by investment in a marketing and dissemination initiative after the learning materials package has been finalised covering three aspects: curricula support to colleges; marketing to AgriSETA approved service providers; and a short 3 day training course for lecturers at training organisations on WH&C and the course materials.

5 CAPACITY BUILDING

5.1 Intentions

The proposal outlined three levels of capacity building will take place in the project:

Year 2009 – 2010:	Students from Walter Sisulu University Graphic Art Department will be involved in illustration of the guides.
Year 2010-2011:	Learners at the UKZN Centre for Adult Education will take the full WH&C course (Technical and Facilitation components) while the materials are being piloted and be capacitated in the process.
Year 2010-2011:	A University of KZN Masters Student in Education is expected to be directly involved in monitoring of the materials piloting process.

5.2 Capacity Building Outcomes

The first two objectives have been more than successfully achieved but the team encountered some difficulty with the third. Despite substantial efforts at UKZN Education Department to find a suitable Masters student over the course of 2009 (to register for 2010). Even when masters funding was offered as part of that motivation, no student has come forward or shown serious interest in the topic.

This failure to secure a Masters student is mitigated to some extent by achievement of the first two goals which surpass requirements set out for them:

- In the 2008 end of year report it was written that two students had been identified to work with the team in producing artwork. The accreditation delays that followed resulted in those two students graduating before the materials development work commenced in earnest. Now, 2 years later, 68 students have had direct exposure for a whole term, where rainwater harvesting was used as their course focus for one full term, ending in the competition and highlight at the annual College prize giving.

- At proposal stage it was envisaged that between 8 and 10 people would attend the piloting of the course materials, possibly in a non-accredited environment should that be the only practical way to pilot. A total of 14 students attended the course at UKZN as part of the Certificate in Education: Participatory Development and 13 of these students completed the course. When qualified, some of these learners are expected to work as food-production facilitators, using their technical and facilitation skills learnt on the course. Feedback from the course was positive and levels of enthusiasm and interest were high, particularly on the practical components being conducted within a village setting. The list of participating students is shown over the page.

Table 5.1: UKZN Students who attended the WH&C Technical and Facilitation Course during the piloting of the draft Learning Material Package

Student no	Surname	Initials	Gender
209536742	Didi	Z	F
209539869	Gumede	B	M
209536713	Kheswa	V	M
202513933	Mavimbela	N	F
209536737	Mkhize	N	F
209537790	Mkhize	S	M
209536700	Mnikathi	B	M
209514608	Mthethwa	N	F
209536696	Ngobese	P	M
201508655	Nkomo	N	M
209537798	Nhlengethwa	T	F
209536625	Nyoka	NE	M
209536633	Sithole	T	F

5.3 Details on Capacity Building at Walter Sisulu University

A collaborative effort commenced in August 2009 and rainwater harvesting was included as a Term 3 theme for 68 students across all years at the school (1st to 3rd year). The effort included the organisation and funding of the following activities:

a) The WRC video on Indigenous Rainwater Harvesting was shown to each class. A series of images around rural water, agriculture, RWH and food production was also shown and discussions around themes with the art class were held. RWH was embedded as a course requirement and a minimum submission was set by WSU. Umhlaba funded each student's art materials for this component.

b) Twenty lead students were selected by the art school to make a one-day site visit to homesteads using rainwater harvesting methods in the Keiskammahoek area to sensitise them to the methods and intended impacts and to meet the kind of people who will be using WH&C methods to grow food.

c) One of the main outcomes for the students was that they would learn to respond to a 'commercial setting' with Umhlaba as the 'Client'. The lecturers' at the college, including the Principal, noted that this was invaluable experience, as many students graduate without the experience of responding to a Client and fail to survive commercially as a result. This experience was a meaningful step towards them finding their way in the commercial world. While some of the art was really good, it was evident that some of the students should really consider a career change.

d) A competition was held and prize money for the top ten illustrations was set up with the University. Prizes were awarded at the annual art-school exhibition on 29 October 2009 attended by a few hundred people. An Umhlaba Director made a speech at the prize-giving, noting the importance of WH&C and food production in the context of rural poverty, and how their art will be used to inspire. The Water Research Commission was publicised as the funder of the work. It is probably fair to say that the students were more interested in the prize money on the day, than the content of the speech.

6 FUTURE RESEARCH

The nature of this WRC assignment was somewhat different from other funded projects in that the process and outcomes were not primarily based on research as such. Although elements of research were essential for the successful completion of the project mainly: literature review; exploring the accreditation framework and assessing the draft guides in the pilot, the bulk of the work pertained to materials development.

The recommendations for further work therefore respond to the main intention of the assignment, which is the training and dissemination of information around water harvesting and conservation.

6.1 Improving Uptake of Materials Developed by the WRC

The Department of Agriculture Five Year Strategic Plan lists WH&C as a priority. Likely training organisations who will give effect to the plan are either agricultural colleges or AgriSETA approved service providers. In reality, courses are offered in a market environment and the colleges / service providers respond to financed demand. There is an opportunity to achieve the WH&C strategic goals by allocating funds for four activities which will actively market and promote uptake of the WH&C learning material package into learning organisations:

- Identify the appropriate qualification and specialisation within the QCTO, and should these not yet be defined, pursue the QCTO specialisation registration process. The specialisation would be achieved by successfully completing the WH&C short course set out in the comprehensive learning materials.

- Develop a complementary short course focussed on agronomy and crop production aspects, for the same target audience of home-gardeners and resource poor farmers. This is needed because the Comprehensive Learning Package for WH&C that was developed under this assignment does not cover the food production aspects, but focuses on securing improved water availability and on the facilitation of WH&C methods. Substantial relevant resource materials for such a short course have already been developed by the WRC under the project 'Agricultural Water Use in Homestead Gardening Systems – Resource Material for Facilitators and Food Gardeners' by Stimie, Kruger, De Lange and Crosby (2009). A 25 to 30 credit short course could then be offered by training organisations alongside the WH&C short course, leaving development facilitators and extension officers with a more complete range of skills needed to promote improved food production with resource poor farmers.

- Allocate funding for an introductory Training of Trainers course to be developed and rolled-out to all of the likely learning organisations, both AgriSETA registered Service Providers and interested Agricultural Colleges. A 3-day outline of the course is provided in the appendices.

- Establish a bursary scheme for extension officers and other Government agricultural employees to take the WH&C short course, providing a market-driven motivation for the Service Providers to run the course. The potential policy clash, that Extension Officers may only study courses equal or higher than their existing qualifications, will present a challenge on this point.

6.2 RWH Methods and Nomenclature Clash

The detailed literature review which formed part of this assignment highlighted inconsistencies in the terminology around water-harvesting and conservation in South Africa. It seems warranted to align South African terminology with international norms, like the Food and Agriculture Organisation.

For example, RWH methods are classified by Mwenge-Kahinda (2009), with some explanation, but without any reference as to where these were derived from:

DRWH – Domestic Rainwater Harvesting (meaning rooftops)
IRWH – In-field rainwater harvesting (meaning micro-catchment rwh)
XRWH – Exfield rainwater harvesting (meaning macro-catchment rwh)

IRWH as it is used in this context is widely called 'micro-rwh' (Oweiss, 2004; FAO, 2003). There are many infield (IRWH) or 'micro-rwh' systems, including negarims, swales, tied-ridges, berm and basin, pitting, ploegvore, trenchbeds, among a long list.

Similarly, XRWH is widely called 'macro-rwh' in most available literature (ibid).

The term 'in-field' has however, also been used to describe a specific variation of one of these micro-catchment methods (namely tied-ridges). Thus in published WRC reports (Botha et al., 2003 and Mwenge-kahinda, 2008) the same term is used to describe two different things:

- Mwenge-Kahinda et al.: A group of about 20 methods that fall under the widely used term 'micro-rwh'
- Botha et al.: A specific application of one of these methods (tied-ridges at 3 m spacing within limited soil and rainfall parameters).

It may be the case that Botha's 'in-field' method (tied ridges) was used by Mwenge-Kahinda et al. to represent all micro-catchment methods in the modelling process. Such an assumption would seem to be a reasonable one for their modelling purposes although this is not specifically stated in that report. Nonetheless, the nomenclature clash, even within existing WRC publications, is cause for confusion.

This nomenclature issue is also evident in the WRC publication on WH&C for Home Food Production (Stimie et al., 2010) which refers to 'run-on rainwater harvesting' to describe what is also called 'diversion swales' (Lancaster, 2008). The term 'run-off farming' is used in a similar but different way by Oweiss (2004) who uses it broadly to describe the difference between farming using rainwater harvesting, rainfed farming and irrigation farming. It is not used in any other 50 or so WH&C publications in the possession of the team, and 'run-on farming' seems to also therefore have colloquial meaning in relation to a specific set of RWH methods, rather than an agreed wider understanding.

Thus, on the issue of nomenclature in the Technical Guide, international norms were followed, largely as set out by Oweiss (2004) and FAO (2003), as contextualised for the South African situation by Denison and Wotshela (2009). This nomenclature does not use the terms DRWH, IRWH and XRWH but categories rooftop, micro, macro and floodwater methods and avoids colloquial terms as primary descriptors. While this approach was adopted, it would be valuable in the South African context to establish a standard nomenclature and description of practices thereby avoiding the confusing, sometimes conflicting and often creative colloquial terms. Some progress to achieving this has been presented by Denison and Wotshela (2009) and in Chapter 1 of the Technical Manual of the WH&C learning package that was developed under this assignment.

Such a publication would be most useful if it took the form of a Glossary of WH&C Terms, under the logo of one or other nationally recognised organisation of which the WRC is one.

6.3 Cost-Benefit Evaluation of Water Harvesting and Conservation

There is increasing awareness within Government, and more readily available material about water harvesting and conservation in South Africa. Water harvesting is embedded for example, not only in Department of Agriculture strategic plans, but also in the policy documents of the Department of Water Affairs, Department of Rural Development and Land Reform, Department of Human Settlements, as well as Development Bank of South Africa literature. Also, some regional development agencies (e.g. ASPIRE in the Amathole District, ASGISA, Eastern Cape Appropriate Technology Unit) are including WH&C in their Terms of Reference for new assignments. WH&C is progressively becoming part of the mainstream discourse, however the term may be understood or even misunderstood by those using it.

Against this background of increasing awareness of the field of work, there is understandably scepticism and differing perceptions on usefulness of the approaches, which limit the willingness of decision-makers, often politicians, or politically-directed technocrats to invest in WH&C. An example of this is the decision within DWA in the 2010-2011 budget year to move the whole Resource Poor Farmers subsidy amount allocated to WH&C (Item 6 on the subsidy list) to the purchase of plastic tanks to be placed on household roofs. While not necessarily a wrong decision, it was motivated on the basis that the other WH&C methods are too expensive and therefore not justified. Yet, there is little factual basis on which to make such decisions.

There are numerous methods of WH&C, and to date, there is only one socio-economic assessment on WH&C that has been conducted in South Africa (Khundlande, 2004). That assessment was on one of the numerous methods (i.e. 'infield water harvesting'). While this work shows positive returns and presents a strong motivation for implementation of that method, the results do not extend to other WH&C methods or initiatives. For example, in 2009 DWA funded, through the Independent Development Trust, an initiative based on a combination of roofwater collection, surface collection, gardening training, swales, trenches, infiltration pits and mulching in some 500 households in five provinces, totalling R20 Million. There is, for example, no basis to assess the usefulness of that investment on agro-economic or socio-economic grounds.

Given that it is a WRC objective to motivate the uptake of WH&C, and that funding for implementation in WH&C is usually from Government sources, it seems opportune that more convincing quantitative and qualitative evidence is generated on the impact of different WH&C methods at household and farm levels.

6.4 Technical Educational Video

A previous WRC assignment (Denison and Wotshela, 2009) produced a 20 minute DVD which gave an overview of WH&C in South Africa. This was a low-budget documentary with a broad scope and did not focus on technical details of the different methods. The DVD was shown during the piloting of the materials and will be included as part of the materials package. It is also reportedly used in other educational environments (Fort Hare University, Univ of Stellenbosch Sustainability Institute).

A technical DVD which provides specific how-to-do-it information, would be a valuable asset to facilitators who will run the course at learning organisations. Such media would also be valuable to fieldworkers who will work with gardeners and farmers at village level.

7 REFERENCES

African Development Bank, 2006. *Rainwater Harvesting Handbook, Assessment of Best Practices and Experiences in Water Harvesting.* AfDB. Tunisia.

Botha, J.J., van Rensburg, L.D., Anderson, J.J., Hensley, M., Macheli, M.S., van Staden, P.P., Kundhlande, G., Groenewald, D.C., and Baiphethi, M.N. 2003. *Water conservation techniques on small plots in semi-arid areas to enhance rainfall use efficiency, food security, and sustainable crop production.* Report No. 1176/1/03, Water Research Commission, Pretoria.

Denison, J., Wotshela L., 2009. *Indigenous Water Harvesting and Conservation Practices: Historical Context, Cases and Implications.* Water Research Commission, TT 392/09.

Food and Agriculture Organisation of the United Nations, 2003. *Training Course on Water Harvesting,* FAO Land Water Digital Media Series No.26. FAO. Rome, Italy.

Lancaster, B. 2008. Rainwater *Harvesting for Drylands and Beyond. Volume 2 Water-Harvesting Earthworks*. Arizona: Rainsource Press.

Mwenge Kahinda, J., Sejamoholo, B.P.P., Taigbenu, A.E., Boroto, J.R., Lillie, E.S.B., Taute, M., Cousins, T. 2008. *Water Resources Management in Rainwater Harvesting: An integrated systems approach.* Water Research Commission Report No. 1563/1/08.

Oweis, T., Hachum, A., Bruggeman, A., (eds). 2004. *Indigenous Water-Harvesting Systems in West Asia and North Africa.* ICARDA, Aleppo, Syria, vi+173pp. En.

Stimie, C., Kruger, E., De Lange, M., Crosby, C.T., 2010. *Agricultural Water Use in Homestead Gardening Systems.* Water Research Commission Report No. TT 430/09.

Appendix 1

Initial Consultations with Stakeholders

(Nov 2007 to Feb 2008)

CONTENTS

1 STAKEHOLDER DISCUSSIONS

1.1 Regulatory Bodies

Name:	**AGRISETA** Machiel van Niekerk
Date of Meeting:	6 November 2007
Contact Details:	machiel@agriseta.co.za AgriSETA House 529 Belvedere Road Arcadia, 0083 Tel: 012 – 325 1655 Fax: 012 – 325 1677

Machiel van Niekerk is the CEO of AgriSETA. The discussion focused on the changes that are currently being made and implemented by SAQA. Mr van Niekerk explained that in the future, unit standards will focus on three key elements of theory, training, and on-the-job practice. He also noted caution if the learning package is produced using the Unit Standards accreditation process given the complexity of this approach. There are few existing unit standards dealing with WH&C and there is substantial change taking place in the policies and frameworks around qualifications nationally that need to be considered against other accreditation routes.

AgriSETA provides PC's and software for ABET training programmes and has also developed learning materials for a range of unit standards; these are available free of charge off the AgriSETA website (www.agriseta.co.za). For example, a Facilitator Guide, a Learner Guide and a Learner Workbook for Unit Standard 116202 (Operate and maintain irrigation systems, NQF Level 1, Credits 2) can be accessed and downloaded off the website. However, limited work has been done in the field of WH&C and in this regard, AgriSeta is unlikely to play much of a role in the assignment which is largely working from first principles without the tight confines of the Unit Standards in place. He expressed his support for the assignment and willingness to engage in future as needed.

He recommended that the team make contact with the following individuals for further information on SAQA and current changes being implemented:

- Fanny Phetla (Quality Assurance Manager for AgriSETA, who deals with ETQA/Accreditation; Tel: 012 3251655)
- Herman van Deventer (an independent consultant who liaises with SAQA on behalf of AgriSETA; Tel: 083 629 0662)

Name:	**AgriSETA Special Advisor** Herman van Deventer
Date of Meeting:	7 November 2007
Contact Details:	hcvd@yebo.co.za PO Box 462 Wapadrand 0050 Tel: 083 6290662 Fax: 086 6708401

Herman van Deventer is an independent consultant who acts for AgriSETA in liaison with SAQA. As such he is a specialist on the accreditation processes and the current shifts in policy and regulations related to qualifications. He noted that skills programmes are compiled from a combination of unit standards (usually taken from the same qualification). Somewhat differently, the Department of Labour's new occupational training model while being unit standards-based, also consists of an experiential and a workplace component. Training for an occupation using this new occupational framework will have three components: knowledge; the generic application of knowledge; and knowledge and application through experience and specialisation. This may be a more useful accreditation route than using existing Unit Standards which are potentially fractured and many will not be directly relevant.

Mr van Deventer recommended that given the nature of this project's objectives, one of the following three options be pursued:

- Link learning material development to unit standards contained in one of the new Agricultural Extension courses, which are currently between public comment and registration; or

- Develop an outcomes-based programme which can be presented by FETs or Techs (design the curriculum, develop learning material and negotiate with Technikons and FETs regarding the acceptance and use of the materials, which would then bear credits through the FET/Tech); or

- Develop a course that is credit-bearing at a university.

These options and other accreditation routes were explored further in the course of the stakeholder discussions and are presented in summary form in Section 3 of this report.

1.2 Universities and Research Related Institutions

Stakeholder:	**University of Free State** **Faculty of Agriculture** Professor Leon van Rensburg Dr Malcolm Hensley
Date of Meeting:	9 October 2007
Contact Details:	University of the Free State 205 Nelson Mandela Drive Park West Bloemfontein, 9301 Tel: 051 – 4012957 vrensbl.sci@ufs.ac.za (Prof van Rensburg) Tel: 051-4012957

While Prof van Rensburg and Dr Hensley are both on the team in a specialist advisory capacity, they also represent the UFS Agriculture Faculty which has an ongoing interest in WH&C. The training materials and courses were discussed in relation to current and future Agricultural Extension training and coursework. There has been discussion at UFS about setting up a WH&C 'Sentrum' which would aim to support applied research through Honours and Masters students focussed on the topic. However this possibility is presently remote and while UFS will contribute and collaborate on the assignment, University involvement in piloting modules is not likely. It was also recommended that contact is made with the following individuals: Joe Stevens, Professor Viljoen (UFS), Dr Wimpie Nel (UFS), Hendrik Smit, and Léan van der Westhuisen (UFS Experimental Farm).

Stakeholder:	**University of Free State Agri Centre** Dr Léan van der Westhuisen
Date of Meeting:	9 October 2007
Contact Details:	Lengau Agri Centre PO. Box 12544 Brandhof Bloemfontein, 9324 mvdw@telkomsa.net Tel: 051-4438859 Cell: 083 4539364

Dr van der Westhuisen manages the UFS Experimental Farm at Sydenham, just south of Bloemfontein. Discussions were around the SAQA accreditation process. Léan advised that if the Unit Standard route is to be followed, this is complex and uncertain. One option that might be simpler is to develop the learning material for trainers/facilitators at Level 5 as a short learning programme and get this accredited through a University. The SAQA accreditation process could then be initiated through the University accreditation and if need be, a bridging module at a lower level be developed after this. Dr van der Westhuisen recommended using a specialist contractor for this process. He also said that it was possible that a pilot programme could be implemented at the UFS Experimental Farm should that be an opportunity that arises from the project.

Name:	**University of UKZN** **Centre for Adult Education (CAE)** Zamo Hlela and Anne Harley
Date of Meeting:	13 February 2008
Contact Details:	hlelaz@ukzn.ac.za Harleya@ukzn.ac.za Phone: (+27 33) 2605911

There is overlap between the project objectives and the CAE courses. Possibilities for collaboration exist. This relates mainly to the piloting of the packages as the target project facilitators are at the same level as the UKZN learners attending the rural development higher certificate. At this stage the University has approved a course on water management with modules that are already structured, but materials have not yet been completed for this. The opportunity is that once the draft materials are ready, these could be easily used in the existing approved course which would allow for materials to be piloted in a well supervised, structured way.

There is also opportunity to select learners so that the materials are appropriate across different contexts to ensure relevance in a more general national application – not limited to UKZN but applicable to other types of colleges and higher learning institutions. This would apply to both the facilitation content (Packages 1 and 2 of this project) and the ABET materials (Package 3). There is a need to think about the gendered nature of the course content; there needs to be monitoring of both teaching and learning in relation to women's roles/men's roles in water harvesting. This is likely to affect who gets trained to facilitate whom, as well as what gets taught. UKZN could provide a gender sensitive educational context to the piloting of the materials.

In relation to capacity building, there is an existing Masters course in adult education programme and these students have to do a dissertation as part of the programme. There are both full dissertation and coursework Masters, but the latter is probably more appropriate to inclusion in the WRC assignment. A Master's half-thesis could focus on monitoring and evaluation of the materials that the project develops and their effectiveness in information transfer during the piloting stage.

In terms of timing, the piloting could take in place in either 2009 or 2010, depending on the progress and timing of the draft learning package, although 2010 seems more likely given the project proposal timelines.

Finally, the underlying development philosophy of the proposed materials is important to CAE. They have a bias towards a participatory, transformatory development process, rather than a top-down, outside expert one. This is in keeping with the general trend of development and seems to be in keeping with the general intentions of the team in regard to the project materials.

Names:	**Agricultural Research Council - Glen** Dr JJ Botha
Date of Meeting:	10 October 2007
Contact Details:	Glen Agricultural College Bloemfontein jj.botha@webmail.co.za Tel: 051 4362816 Cell: 0824144386

Discussion focused on the development of the ARC Extension Manual titled *On-Farm Application of In-Field RWH Techniques on Small Plots in the Central Region of SA (2007*). Dr Botha stated his willingness to support the WRC assignment with comment and input, but saw no direct role of the ARC in the training or piloting aspects. Importantly perhaps, he recommended that the development of training materials for trainers/facilitators is focused on extension officers as there is a critical need for more appropriate training of these cadres. He suggested the team might contact Danie Beukers and Rinda van der Merwe for further input on the project.

Name:	**University of Pretoria** **Faculty of Agriculture and Rural Development** Dr Joe Stevens
Date of Meeting:	6 November 2007
Contact Details:	joe.stevens@up.ac.za Room 8-4, Agric Science Building, Lunnon Road, Hatfield Phone: (+27 12) 420 3249 Fax: (+27 12) 420 3247

Dr Joe Stevens is currently working on extension materials for smallholder irrigation schemes funded by the WRC. Based on his experience in this project, Dr Stevens recommended that:

- major outcomes are first identified before material development begins
- the learning materials for trainers/facilitators is aimed at Level 5 (diploma level);
- the learning materials for groups/learners in communities are not aimed at a specific level, but are designed to be useful resources for ABET programmes

1.3 Agricultural Colleges

Discussions were held with the Agricultural Colleges with the intention of exploring potential for collaboration, both in materials development (content and relevance) and in piloting of the materials. The outcome of these meetings is summarised in the table overleaf.

In general there is interest in using the learning packages from about half of the colleges and consequent interest in participating in workshops or perhaps the piloting of materials.

Agricultural College Stakeholders

Name & Surname	Position at College	Agricultural College	Cell Phone	E-mail	Landline phone	Comments	Possible involvement / role within project; Available for May 2008 Workshop?
Melissa Gillespie	FET lecturer	Cedara	0766449101	mlea@mailbox.co.za	O333559304	No experience / involvement with RWH, but keen to be part of project.	Testing of material; Depending on date and venue of workshop, yes – will be available.
Joseph Foli	Principal	Owen Sitole (OSCA)	0823126614	folij@osca1.kzntl.gov.za	0357951345	College very keen to participate; send more info re project objectives / methodology in order to identify relevant indivi-duals.	Field work; Testing of material; Will be available if date/s allow.
M.J. Dladla	Deputy Manager, FET	Tompi Seleka	- N/A	- N/A	0132689300	Capacity is a problem, HR and time wise – but would like to be involved if possible. Keep informed.	Testing of material Availability depends on specific date/s and venue – please inform.
Melvin Makungu	Vice Principal, Man. FET	Glen	0834959269	melvin@glen.agric.za	0518611255	Capacity scarce, but would like to be involved.	Testing of material; Availability depends on date / venue of workshop – please inform.

Name & Surname	Position at College	Agricultural College	Cell Phone	E-mail	Landline phone	Comments	Possible involvement / role within pro-ject; Available for May 2008 Workshop?
Loraine v.d. Berg	Agric. Scientist	Grootfontein	0823486469	lorainevdb@nda.agric.za	0498421113	"Valuable subject, long overdue"	Field work; Testing of material If free, yes – will be there. Inform.
Patterson Mdlazi	Asst. Manager - FET	Tsolo	0828575814	ppzmdlazi@webmail.co.za	0475420220	The institute focuses on Rural Development – RWH integral part.	Field work; Development and testing of material. Yes, available.
N.S. Makhaga	Lecturer - FET	Fort Cox	0733581751	nmakhaga@yaho.com	0406538033	Very interested, RWH needed in EC area.	Field work; Materials testing; Development of materials (assist) Yes, will be available.
Zenovia Parker	FET - coordina-tor	Elsenburg	-	zenoviap@elsenburg.com	0218085018	Interesting subject, but not part of College mandate/study area. Limited capacity.	-
Sello Mokha-chane	FET	Potch	- N/A	smokhachane@nwpg.gov.za	0182996556	No response yet, will continue to follow up.	?
Lufuno Muthapuli	FET/CAT	Madzhivhan-dila	0722130940	muthaphulill@yahoo.com	-	No response yet, will continue to follow up.	?
Jeanette Sprink-huizen	FET - coordina-tor	Lowveld	-	jeanette@laeveld1.agric.za	0137533064	No response yet, will continue to follow up.	?

2 ACCREDITATION ROUTES AND FRAMEWORKS

One key issue has emerged from the discussions with stakeholders and the WRC Reference Group and this relates to the most appropriate accreditation process for the assignment. This is fundamental as the accreditation route and framework will determine both how the courses and materials are compiled and which institutions will be readily able to use the final materials.

Opportunities for collaboration with existing institutions in piloting the draft materials have also emerged from the stakeholder discussions. Piloting is a critical component of the materials development process and is partly dependent on which accreditation route is chosen.

The three likely accreditation options that have emerged are summarised in this section, with comment on the piloting implications. It is essential that the

2.1 Accreditation Option 1 – Existing and New Unit standards

This option is described in substantial detail in the earlier Project Report No.2 and only a brief summary is presented again here. There option for developing materials in alignment with SAQA's current requirements for accredited qualifications and unit standards is limited. Based on the discussions to date, there is general consensus that this route is inherently problematic. To achieve accredited materials by this route, the project would need to define a new set of specific outcomes and assessment criteria that are directly relevant to the content required (for WH&C and facilitation) with the aim of developing this into proposed new unit standards. These could then be put forward by the WRC for possible SAQA accreditation. There are a number of serious problems that this option presents:

- Unit standards are not supposed to be designed in isolation, so each existing Unit Standard fits in with an existing accredited qualification, either as a core or an elective. When one 'picks and chooses' Unit Standards from a range of qualifications for a new qualification (such as WH&C) they contain superfluous outcomes and content from the original qualification that originated the Unit Standard. Because Unit Standards must be used in their entirety this results in some or many of the outcomes not being relevant to WH&C, and a course structure which is disjointed.

- If the existing and proposed unit standards (for WH&C) are designed to be incorporated into a new qualification, learners would have to complete the entire qualification (such as a Certificate or Diploma) in order to achieve accreditation. They will not receive part accreditation for completed modules or course components. This means the material is less flexible to use by a range of institutions.

- There is no guarantee that the proposed unit standards will be accepted for accreditation at the first attempt or even with substantial revision. This assignment aims to prepare materials with the accreditation process in mind and is only required to begin the accreditation process. The final accreditation therefore remains an uncertainty at the contract completion, with discontinuity at the critical stage of accreditation and revision – even then without certainty of acceptance.

Moving along an accreditation route using existing and new unit standards seems to be a high-risk approach, both in terms of achieving relevant, focussed material and in terms of achieving the final objective of an accredited course. The project aims seem least likely to be achieved using this option, and must be considered against other accreditation routes which are available.

2.2 Accreditation Option 2 – Modules for Higher Education Institutions and Agricultural Colleges

Higher education institutions including universities and agricultural colleges are able to put forward new qualifications to NQF and SAQA that the learning institutions themselves have screened. These qualifications are then given an initial "blanket" accreditation by SAQA and can be taught. The institution itself undertakes a part of the quality insurance function and ensures compliance with the NQF.

If one works closely with such centres of higher education, it is possible to design course modules and related materials at the required new NQF 5 and 6 levels (old NQF 4 and 5 levels). This is the level required by the Terms of Reference for this comprehensive learning package. Such courses would have learning objectives, outcomes and assessments within the framework of credits without needing to adhere strictly to Unit Standards, thereby avoiding the problems described above. This has advantages of flexibility and means the all materials can be directly relevant to the topic of Water Harvesting and Conservation (Package 1)and the facilitation thereof (Package 2).

Favourable Factors

- This WRC project aims to produce two learning packages at (the new) NQF levels 5/6. This falls within the ambit of Higher and Advanced Certificates and Diplomas and is well suited to the Agricultural Colleges or Universities with adult education programmes.

- The applicable content for each learning package has been considered and seems likely to fall between 12 and 18 credits, based on scope, notional hours and depth of knowledge required for the NQF levels of the target learners. This falls within the specifications for a module size at higher education level which is typically 16 units.

- Following from the above, it is practical to design two modules; one covering technical aspects, the other covering facilitation and extension techniques. These have inherent flexibility and could be structured within the various higher learning institutions either as a specialisation or as electives within a broader, existing qualification.

- The context of the broader qualification is important as this must provide fundamental and core modules that are complimentary to specialisation modules from this assignment. These core modules may include themes such as personal, academic and community development, theories and practise of rural development and participation, agricultural practices, adult education, facilitation and project management for example. Other technical modules could also be relevant.

Example of Module-based Qualification

The Certificate in Education at UKZN is an NQF Level 5 qualification (new levels) targeting students already engaged in adult education and/or community development. It is offered on a part-time mixed-mode basis over two years, with students completing four modules each year. Students typically spend one day a week on campus, and work through materials in between. The Certificate is an access programme to the B.Ed, B.Soc.Sci and B.Com.Dev degrees. The Certificate is lodged with SAQA and accredited by the Council for Higher Education as an offering of the University of KwaZulu-Natal. Most CEPD students come from communities in and around Pietermaritzburg, but students also come from communities as far afield as Richard's Bay, Newcastle and Mount Frere. Many are from poor and marginalised communities and are involved in community-based organisations. Some are employed in development NGOs and in local and provincial government.

Two certificate programmes are currently being offered:

- the Certificate in Education (Participatory Development), offered on the Pietermaritzburg campus.
- the Certificate in Education (Workplace Learning), offered on the Edgewood campus in Pinetown.

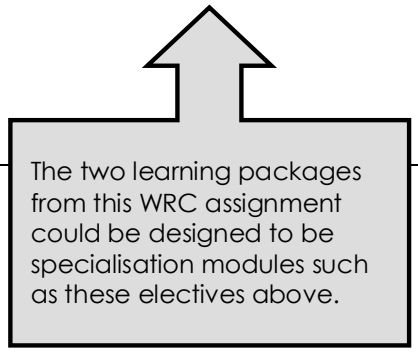
The course curriculum is illustrative

Curriculum Year 1 (core courses)

Semester One	**Semester two**
Life Long Learning (16 credits) This module has three main focus areas: personal development, academic development and community development. The module is aimed at: • identifying and acknowledging the knowledge, skills and experience learners with bring with them; • developing skills to present their competencies; and • beginning the development of the learning skills they will need to cope with the programme and a wide variety of other real-life and academic learning experiences.	**Intro to Development** (16 credits) This module is aimed at familiarising learners with the core concepts and practices of participatory development. The module includes: • Theories of development • The sustainable livelihoods framework • Transformational participatory development • SA development policy: Policy & practice • Participation • Facilitating development • HIV & Aids, gender & development • Compiling a community profile using a social compass
Introduction to Adult Education (16 credits) This module is aimed at familiarising learners with the core concepts and practices of adult education The module includes: • How adults learn • Historical context and barriers to learning • Socio-economic context • The link between adult education and development • Designing educational events • Participatory educational methods • Resources and materials	**Introduction to Project Management** (16 credits) This module is aimed at familiarising learners with the core concepts and practices of project research, planning, implementation and evaluation. The module includes: • Adult education & development projects • Projects, programmes & organisations • Research & planning • Fund/resource raising • Leadership • Implementing & evaluation

Curriculum Year 2

Specialisation modules (2 x 16 credits) Learners undertake two modules which give them a specific understanding and provides them with the appropriate tools to undertake adult education/community development related to a specialist area. Specialisations currently included in the rules for the CEPD include: **Adult Basic Education & Training** (2x16 credits) **Conflict transformation** (2x16 credits) **Care & Support** (1x16 credits) **Child & Youth Development** (1x16 credits) **Human Rights & Child Protection** (1x16 credits) **Economic Justice** (2x16 credits) **Entrepreneurship** (2x16 credits) **Land care** (2x16 credits) **Leadership & Management of NGOs** (2x16 credits) **Local Government** (2x16 credits) **Water management for household systems** (2x16 credits)	**Development in Practice** (2x16 credits) These two modules are the service learning component of the programme. They require learners to practically apply what they have learned in the Certificate course. During the first Development in Practice module, learners conceptualise and plan an adult educational/developmental project. In the second module, they apply this plan. During this time, they are supervised by a member of academic staff, who meets with them on a weekly basis and helps them to reflect on what they are doing, and draw out learnings from their experience. The emphasis in this component is not that they flawlessly implement the project they have planned, but that they reflect on the process, and learn from it.



2.3 Accreditation Option 3 – Occupational Qualifications Framework

The Occupational Qualifications Framework (OQF) is part of a current process of structural transformation of the National Qualifications Framework. Information in the public domain is limited as details have not yet been made public. Given the importance of establishing the most appropriate accreditation route for this research assignment, an attempt has been made at summarising the OQF. This is based on a set of interviews with people within the process and from limited written information. It is acknowledged that this summary of the OQF may contain inconsistencies or inaccuracies. This does not however detract from the conclusion that this is a potentially practical accreditation option and warrants further attention.

An occupational qualification represents the outcomes of a learning process that results in occupational competence (ie. the ability to practise that occupation in a real-time, real-life setting). These learning processes will link with other courses, modules and learning programmes in the HE and FET sectors. One of the key purposes of the Occupational Qualifications Framework is to clearly articulate labour market needs of the formal market as well as informal and social development. Another key purpose is to ensure alignment with qualifications in the Higher Education and Further Education and Training Qualifications Frameworks.[1] The OQF will be housed within the Department of Labour and will be based on two types of qualifications:

- **An occupational award** (at the appropriate level of the new proposed 10 level National Qualifications Framework) which certifies the achievement of an occupational title.

- **A skills certificate** (of 18-20 credits at the appropriate NQF level) which certifies a distinct but occupationally-relevant skills set.

For these qualifications to be registered, they will have to reflect three modes of learning:
- The acquisition of knowledge and theory (20% of credits)
- The acquisition of practical skills (20% of credits)
- The structure, duration, range and scope of work experience (20% of credits)

The remaining 40% of credits in a qualification is discretionary between the three learning areas, depending on the importance of each area to the occupation. As qualifications within this framework will be registered, the accreditation of learning programmes falls away. Registration is qualification-based and curriculum-based, rather than unit standard-based. The curriculum will provide guidance on access requirements, articulation with other learning pathways, the content, learning activities and assessment guidelines, physical and human resources required for implementation, learning required for specialised occupational tasks, and risk factors associated with the occupational practices (health, safety and environment).

The design and development of occupational qualifications, curricula and assessment guidelines will be driven by experts drawn from Communities of Expert Practice (CEP). Unlike the Standards Generating Bodies (SGB), these working groups will be convened for a particular purpose to perform various tasks, and will be structured to represent sectoral interests.

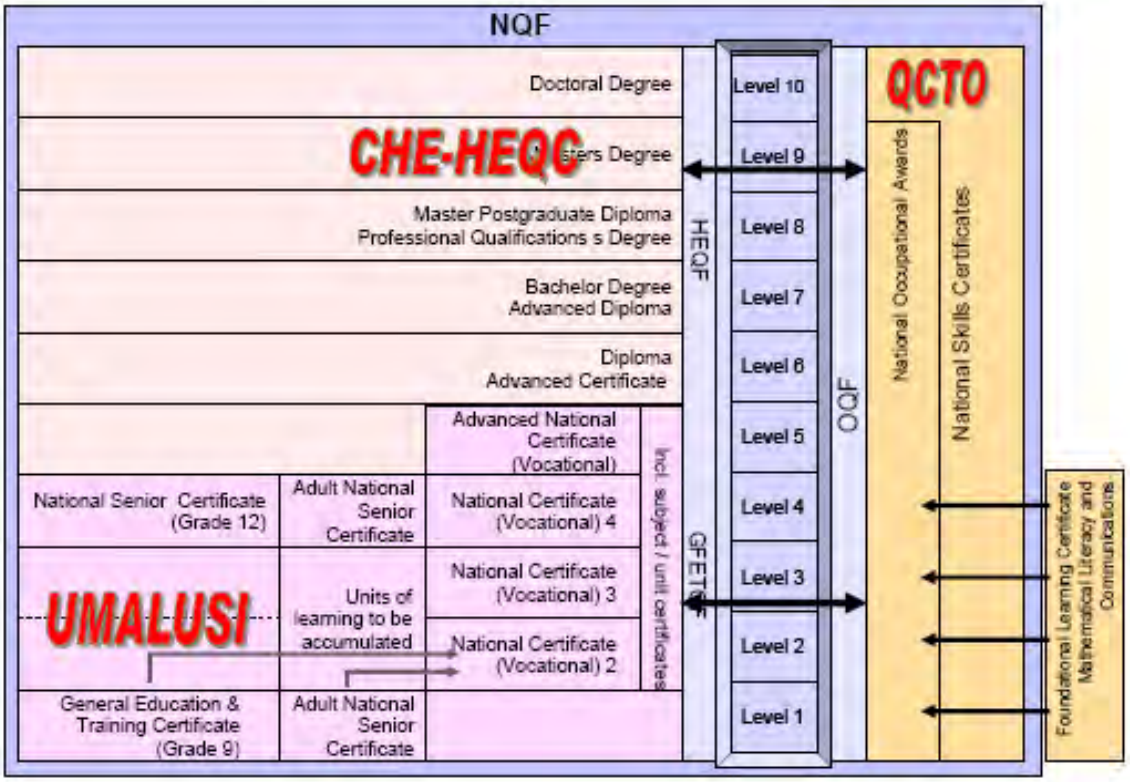
Occupational qualifications will be awarded on the basis of a final integrated summative assessment of occupational competence, similar to trade tests or 'Board Exams'. 'Phase'

1 Information obtained primarily from: Vorwerk, C. 2007. Occupational Qualifications Framework: Proposals for a revised approach to the development and management of the occupational qualifications on the NQF. Q-Africa Conference, November 2007.

tests, interim assessments and skills certificates are likely to be awarded, leading up to the final assessment.

Relationship between the Occupational Qualifications Framework and the NQF

Unit Standards will, in the OQF be revised to reflect the three modes of learning. The diagram below shows the relationship between the OQF and the other qualifications frameworks within the NQF.



The NQF rules will be revised and new combinations will be used in the OQF. The fundamental component of the NQF will fall away, leaving the core and specialised components. It is foreseen that the core components will be more generic and shared by a number of different occupations, and that the specialisations will be specific to an occupation or even a focus within an occupation.

The fundamental component will be embedded in the core, and will be specific to the needs of the occupation. It is also foreseen that these qualifications will articulate well with other qualifications as shown below.

The NQF level of each occupational qualification will be determined by the following:

- The NQF level descriptors (as determined by SAQA)
- The skill level of the occupation in the Organising Framework of Occupations (OFO)
- International practice

Summary of fundamental changes to the present situation

a) Unit standards will not be registered through the ETQA and separate SETAs. SETAs will no longer develop, register or provide quality control – this will be the function of the QCTO. Specialists for a particular occupation will be employed to fulfil this role.

b) Material development will be conducted by experts in the field of occupation. They will either be employers or people that are actually doing that kind of work/trade/ occupation. They will decide on the occupational profile (the tasks, knowledge and skill sets). For example, for the training of facilitators, training/advising/facilitating will be the core of their learning; what they will facilitate will then be added on as specialisations.

c) If there is no workplace component, a qualification will go through the Higher Education and SAQA route.

d) For Occupational qualifications, the present service providers will still be used. A list of occupations has already been registered.

e) Three different types of unit standards are proposed; knowledge, skills, work experience. At present, these components are combined within unit standards.

f) Learnerships will no longer rest with FET Colleges and Higher Education, but with the QCTO. The role of SETAs will change to look at learnership agreements and implementation, rather than quality control and registration.

g) SGBs will no longer be a consultative process, but will be expert-based and called CEPs (Communities of Expert Practice).

h) The NQF will now become a linked framework rather than an integrated one. The structures and processes for Higher Education and FET already exist. The NQF will accommodate the 3 frameworks and will still be responsible for deciding on level descriptors.

i) For the occupational framework or group, knowledge components can still be provided through educational institutions. Agreements will need to be put in place for the provision of the other components (skills and work experience).

j) 2 Qualifications will be available through the OQF:

k) Occupational awards will ensure recognition as a competent practitioner (longer experience route and more formal recognition);

l) Skills certificates: shorter courses that include specialisations have to be linked to occupations.

m) Only employers can undertake to run and manage an occupational award in its totality. They will employ the service providers and claim money from SETAs where they are registered. The training does not have to fully comply with the focus of the SETA, but has to rather be seen as a national priority. A national scarce skills set will be registered by 2011.

The Organising Framework of Occupations (OFO)

The OFO is essentially a classification system for occupations. Each group of occupations will contain a descriptor and a list of tasks. Practitioners active in the labour market will define the knowledge, skills and work experiences required for each of the tasks. The practitioners, together with curriculum experts, will then refine these into a curriculum, the qualification, the outcomes (standards), and summative assessment requirements. The list of occupational clusters, within which the occupational groups have been structured as follows:

1. Accommodation, Cleaning and Food Preparation related occupations
2. Arts and Design related occupations
3. Business Administration, Management, Information and Human Resources related occupations
4. Electrotechnology and Telecommunications related occupations
5. Extraction, Construction, Demolition and Civil Engineering related occupations
6. Farming, Horticulture, Nature Conservation, Environment and related Science occupations
7. Financial and Insurance related occupations
8. Installation, Maintenance and Repair related occupations
9. Medical, Social, Welfare and Sports related occupations
10. Production related occupations
11. Sales and Marketing related occupations
12. Security and Law related occupations
13. Teaching and Training related occupations
14. Transportation and Materials Moving related occupations

Qualifications Council for Trade and Occupations

This Council is presently in the process of being constituted under the auspices of the Department of Labour. It is being supported by GTZ. The process will be complete in 2011. At present the organisational frameworks and policies are being worked out. A call will be put out by April 2008 for curriculum developers to start working with the departmental team. The qualifications guidelines will be available at that time. Trades and occupations will be registered, as opposed to unit standards, which is presently the case. They will have a learning component, a training component (skills) and a workplace component. Most occupations cut across the present delineations of SETAs and the ETQAs.

3 IMPLICATIONS FOR THE PROJECT

The stakeholder consultations were complemented with input from the Reference Group meeting held in February 2008 and additional research into accreditation routes. This has lead to two implications for the project. These will be further interrogated at the stakeholder workshop on 14 May 2008 as they set direction for the whole assignment.

3.1 Positive Interest from Learning Institutions

There are a number of institutions which have an active interest in the progress of the assignment and the final product. These include seven of the agricultural colleges nationally, and two universities with courses in rural development and agriculture (UFS and UKZN). While it is likely that the number of institutions who will use the final materials will be less than these who are 'interested', the positive response lends optimism that course material will be relevant and based on need. It also means that the final learning package is likely to find ready application as it will be conceptualised and tailored with input from selected key institutions. Their ongoing involvement will be a key success factor in this project.

3.2 Two Viable Accreditation Routes

There are two practical accreditation routes that have emerged as viable options and a third, the original unit standard route, that is now concluded to be cumbersome and inappropriate. The consultations showed consensus that moving along the original unit standards route is unlikely to provide relevant material. In addition, going the Unit Standards route poses substantial risk to the longer-term objective of course accreditation after the completion of this assignment as this remains uncertain.

The new, but still incompletely defined Trade and Occupational Framework, presents promise and seems to be one of the two workable accreditation alternatives. Government is still finalising this framework and while final gazetted information is not available, this route does not seem to present any advantages over the modules approach in the paragraph below. This lack of comparative advantage applies both to the relevance of the learning package content and its ready uptake by a range of institutions who will use the developed materials. The holistic nature of occupational training suggests a less flexible working framework for the learning package itself, than would be the case with the modules. Modules demand inherent flexibility given the wider range of courses and programmes within which they would be used.

Accreditation and relevant application of the three part learning package seems most readily achieved by designing 'modules' or 'electives' that fit into existing accredited programmes – either at higher certificate or higher diploma level. This approach is currently defined and can be applied to the assignment with a high degree of certainty of accreditation outcome. Furthermore, content and material relevance can be ensured as the modules would be formulated to complement existing curricula at the agricultural colleges and other institutions such as the UKZN Centre of Adult Education – ensuring a more general usability of the materials. The modules which are produced using this accreditation route could be seamlessly slotted into an 'Occupation' training course at a later stage. This would complement a range of other subject matter that the Expert Panel of the OQF might require. As such, the modular courses can function as course building-blocks with resultant wider application in a range of accreditation contexts.

Appendix 2

Accreditation Consultations and Workshops

CONTENTS

List of Annexes

1 SUMMARY OF WORKSHOP SESSIONS

1.1 Approach

The approach adopted in preparation for these stakeholder workshops was to aggressively lobby participants in order to ensure attendance. Two workshops and one procedural meeting with the Department of Labour were held over the months of May and June 2008. Attendance at these meetings comprised senior personnel from the following key organisations:

Water Research Commission
Department of Agriculture
Department of Labour
University of the Free State
University of KwaZulu Natal
Albert Sithole Agricultural College
The South African Council of Agricultural College Principals
The Umhlaba Consulting Group (WRC Project K1776)
Rural Integrated Engineering (WRC Project K ……)
University of South Africa (UNISA) Food Security and Nutrition Programme
AgriSETA
University of Pretoria (Agricultural and Rural Development Department)

Detailed attendance registers with names and contact numbers are attached to the minutes of each meeting. The purpose of each meeting is summarised below and the minutes are attached in Annex 1, 2 and 3.

1.2 Workshop and Meeting Data

The meetings and workshops organised by the Umhlaba Consulting Group in this reporting period were:

Date	Primary Aim	Annex Details
14 May 2008	Workshop for educational and other stakeholder groups as per TOR to achieve decision on which of 3 accreditation pathways would be most appropriate for the assignment.	1
26 May 2008	Multi-stakeholder meeting with the WRC, Department of Labour and Department of Agriculture to commence formal accreditation process within the Trades and Occupations framework.	2
17 June 2008	Multi-stakeholder workshop, mandated by the Department of Labour to propose the Community of Expert Practice leading to Curricula Development.	3

1.3 Workshop 1 - Clarification of Accreditation Direction

The accreditation frameworks in South Africa are currently undergoing major revision. There is widespread acknowledgement that the current Unit Standards framework does not meet the needs of the workplace in commerce, industry and agriculture. For this reason the Quality Council for Trades and Occupations has been structured and will aim to develop skills using a more workplace-oriented skills development approach.

In the first workshop (minutes in Annex 1) an accreditation specialist was recruited to present on the complexities and currents of change within South Africa. After discussion and debate it was agreed by consensus that the most practical way forward for accreditation is to develop the materials in alignment with the framework for Trades and Occupations. In order to act on this resolution, the workshop was informed that an official request to the Department of Labour was required. The Department of Labour oversees the accreditation systems in South Africa, and further steps to accreditation have to be directed and approved by it. The Umhlaba Group collaborated with the WRC to submit a formal letter of request for a meeting, and key participant organisations were mobilised to attend the meeting.

1.4 Workshop 2 - Due Process with Departments of Labour and Agriculture

The second meeting (details in Annex 2) was a procedural meeting arranged with the Department of Labour and the Department of Agriculture – the two key government institutions involved in this assignment. WRC, contracted research organisations and selected academic institutions also attended.

The legislative process of establishing the Quality Council for Trades and Occupations is underway, approved by Cabinet on 28 May 2008 and is thus a new process with elements of uncertainty as it is being unfolded. The legal basis is expected be concluded by November 2008. The Quality Council for Trades and Occupations will be established during 2009 and is expected to be fully functional by 2010. Thus the timing is positive for alignment of this assignment with the QCTO processes, although this will remain in a pilot phase until the legislative process is finalised 2 years from now. Following this route will ensure that Umhlaba meets the contractual funding requirement from WRC to 'commence the accreditation process', without delaying until final structures are in place. Subsequent action to finalise accreditation (which is a final objective of the WRC, although beyond the TOR of the current Umhlaba assignment), should then be routine.

The meeting with the Department of Labour resulted in official support for the process, and further procedural direction was provided. Umhlaba was delegated the responsibility of calling an Accreditation Reference Group meeting. The WRC funded transport and accommodation for this meeting, which was held at the ARC offices in Weavind Park (Silverton).

1.5 Workshop 3 – Accreditation Reference Group

The QCTO required a Community of Expert Practice (CEP) to be established in order to decide on the scope of the occupation (for a rainwater harvesting practitioner) and on curricula details. However, in order to establish the CEP, the Department of Labour instructed that a Reference Group was first convened (following a clear process, as minuted in Annex 3) in order to address the following two issues:

- The location of the occupationally-directed learning materials within the Organisation Framework of Occupations (OFO).
- The composition of the pilot "Community of Expert Practice" to be recommended to the Department of Labour

Once the Reference Group had convened and addressed these two issues, the way would be paved for the Department of Labour to take the lead in supporting the process further, both in terms of direction and of funding.

This third workshop was held on 17 June 2008, following the specific process required by the Department of Labour. Substantial detail of the correspondence involved has been included in Annex 3 in order to fully document the procedural correctness of this step.

In short, the outcomes of the meeting were that:

- A set of names for the Pilot Community of Expert Practice was recommended to the Department of Labour.
- A short motivation for funding was submitted to the Department of Labour in order to financially support the proposed Community of Expert Practice for Rainwater Harvesting and Conservation.
- Specific occupational names and their location within the Organising Framework for Occupations were decided on.

Minutes of the 17 June 2008 Reference Group Meeting were produced by Human Capital Resource Development CC (Herman van Deventer) and are contained in Annex 3.

2 WAY FORWARD

It is of contractual importance to note that the Umhlaba Project team has initiated the accreditation process as required by the project Terms of Reference, through the series of workshops with key stakeholders which are fully documented in this report.

The next step, which is the formation of the Pilot CEP, can only be effected by the Department of Labour. Timelines for this process are not yet known, but are expected to be in the region of 2 to 3 months; the process could, however, take much longer. Approvals are required by various committees as well as by the Director General of the Department, and this is a new and uncertain process for the Department itself.

Given the clarity obtained to date on the accreditation process, the involvement of key stakeholders in arriving at consensus on an accreditation pathway, it is proposed that the structuring of the curricula and the materials development process now continues without further delay. While every effort will be made to interact with and actively participate in the pilot Community of Expert Practice which will be formed in the coming months, the material development process must proceed, or the contract deliverables and timing would need to be altered. This has been discussed with the WRC prior to submission of this report and seems to be the pragmatic way forward.

The project team will commence work on structuring the curricula based on the organising framework of occupations, as detailed in Annex 3. The Draft Curricula will be detailed in the next project deliverable (ie. No. 5 – The Learning Package Framework), to be submitted in July 2008. Once this framework is structured, the detailed material compilation will follow.

In a separate but parallel process, the Department of Labour can move to set up the Pilot Community of Expert Practice which, once established, can build on the curricula content and material development that the Umhlaba project team will have compiled. The project team will continue to actively liaise with the Department of Labour while moving the project forward on the basis of the Terms of Reference and the timing of the contract deliverables.

ANNEX 1

DETAILS OF WORKSHOP 1
14 MAY 2008

Water Research Commission

Minutes of Meeting

Project Title:	Development of a comprehensive learning package for education on the application of water harvesting and conservation
WRC Project No:	K//5/1776/4
Umhlaba Project No:	UCG054
Time and Date:	9:00 am 14 May 2008
Location:	St Georges Hotel, Pretoria

1. Present:

Dr Andrew Sanewe	Water Research Commission (WRC)
Heman van Deventer	Independent Consultant
Jonathan Denison	Umhlaba Consulting Group (UCG)
Prof Wim van Averbeke	Tshwane University of Technology (TUT)
Heidi Smulders	Umhlaba Consulting Group (UCG)
Luvuyo Wotshela	Umhlaba Consulting Group (UCG)
Erna Kruger	Umhlaba Consulting Group (UCG)
Godfrey Kundhlande	University of the Free State (UFS)
Leon van Rensburg	University of the Free State (UFS)
Marna de Lange	Socio-Technical Interfacting (STI)
Chris Stimie	Rural Integrated Engineering (RIENG)
Leán van der Westhuizen	University of the Free State (UFS)
Joseph Foli	Owen Sithole College of Agriculture (OSCA)
Marius Botha	Independent Consultant

Contact numbers and the attendance register are attached.

2. Purpose of Meeting:

The 1-day strategy session was called by the Umhlaba Consulting Group as required by the project methodology and Terms of Reference. More specifically, the purpose of the meeting was:

1. To decide on the best accreditation pathway for the development of the first two components of the Comprehensive Learning Package (Part One, which covers the technical WH&C content and Part Two, which covers training and facilitation skills).

2. To obtain input into the curricula and course content for each of the three components of the comprehensive learning package.

The project Report No.3 was circulated to participants before the session. This report summarised accreditation pathway options as they were understood from the first few months of the study.

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3. Agenda

The Agenda is attached in Appendix A

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4. Presentations and Input

The key presentation, outlining the accreditation option through the Trade and Occupations framework, as established by the Department of Labour, is attached in Appendix B

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5. Outcomes of the Meeting

It was resolved that:

a) The accreditation pathway for Parts One and Two of the Comprehensive Learning Package (CLP) is best approached through the Trade and Occupations framework.

b) Following this route would require setting up a meeting with the Department of Labour and requesting that they assist in forming a Pilot Community of Expert Practice (CEP), who would:

- define the occupation within the Organising Framework of Occupations
- Define the detailed occupational description and the learning curricula that is required.

Once these two elements are established by the CEP, the WRC Project Team can proceed with developing the materials, aligned to the defined occupational framework for later accreditation.

c) Parts One and Two of the Comprehensive Learning Package (Technical Guide and Facilitation Guide) will be developed at Levels 5/6 of the new 10 level scale of the National Qualifications Framework (NQF). This replaces the existing Level 4/5 contained in the Terms of Reference which is now outdated. The accreditation process will be commenced for these two guides targeting post-matric learners.

d) The ultimate end-users for which the Comprehensive Learning Package is targeted, and which Part Three of Comprehensive Learning Package will directly address, are are resource-poor people. These people were defined as being likely to live in rural villages, having little or no literacy, and having little or no experience in farming. Part Three of the CLP will be developed specifically for this end-user group and no accreditation will be sought for this guide.

e) Content on water-harvesting and conservation practices within the three guides (that make up the Comprehensive Learning Package) will cover homestead gardens, and field production. These would include a range of methods for water harvesting and conservation (eg. contours, bunds, pits, trenches, basins, flood-diversion etc.) which have a common element of earth-moving, excavation, tillage or mulching, to maximise infiltration into the soil-reservoir (root-zone) or into constructed reservoirs.

f) The body of work in the three guides will be focussed on the technical elements of rainwater harvesting and conservation methods. Content on garden and field agricultural production, social organisation for production, agronomic aspects etc. will be addressed in a contextual manner. This means that the WH&C methods will be presented and discussed in relation to how they will be used. These manuals will therefore not enter into details on mechanisation, irrigation, hydroponics or agronomic practices – either at homestead or field level – but will simply ensure that the WH&C methods complement, and can be used with other available literature which details these related practices.

ACTIONS

Item	Description	Action	Due Date
1	To arrange, in collaboration with the Water Research Commission, a meeting with the Department of Labour to discuss accreditation within the Trade and Occupational framework in order to commence the process of establishing a Community of Experts to outline the curriculum framework for specialisation in WH&C.	Denison / WRC	30 May 08

Minuted by:

Jonathan Denison
Umhlaba Consulting Group
jdenison@umhlabacg.co.za
043 7221246
082 5776481

Water Research Commission

ACCREDITATION ROUTES and DESIGN of a WATER HARVESTING TRAINING COURSE OUTLINE

A 1-DAY STRATEGY SESSION

WRC Project 1776

Comprehensive Learning Package for Water Harvesting and Conservation

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DATE: 14 May 2008
VENUE: St Georges Hotel, Pretoria (Old Pretoria – Kempton Park Road)

Key Objectives:

1. Decide on best accreditation pathway for learning materials under development
2. Provide input to curricula and course content for three elements of learning package

Programme:

Times	Topic	Provocateur
9:00 am	Arrival	Cheap instant coffee
9:30 - sharpstart	**Who is here and why**	Dr Andrew Sanewe
9:50 am	**Accreditation Politics and Pathways –** *Unit standards now and Occupational Qualifications next*	Herman van Deventer (accreditation specialist)
10:30 am	**Modules – A working example** *Why and why not …*	Erna Kruger (team)
10:50 am	**Which way on accreditation ?** *Discussion – decision – direction*	You (facilitated by Jonathan)
12.30 pm	**Lunch alagrande**	St George
1:00 pm	**Draft content of WH&C manuals x 3**	Jonathan and Erna
1:30	**Critique and Content Rework**	Facilitated by Heidi Smulders
3:30	Close and Goodbye	Jonathan and Dr Sanewe

Your invitation to this gathering has not been made lightly. We would be genuinely grateful if you could find the time to attend this critical project meeting.

WRC Project 1776 – Comprehensive Learning Package for Water Harvesting and Conservation

List of people invited **14 May 2008**
St Georges Hotel, Nellmapius, Pretoria (Old Pretoria – Kempton Park Road)

Name	Institution	Cell Phone	E-mail	Landline phone	Fax	ATTENDING ?
	REFERENCE GROUP					
Dr Sanewe	WRC	083 2325235	Andrews@wrc.org.za			Yes
Mr J Foli	Owen Sithole College of Agriculture	082 3126614	folij@osca1.kzntl.gov.za			?
Mr Kgabokoe	National Department of Agriculture	083 6258782	joek@nda.agric.za			?
Dr G Kundhlande	University of the Free State	072 4454279	kundhlg@ufs.ac.za			?
Dr A Modi	University of UKZN	072 2074325	Modiat@ukzn.ac.za			?
Prof van Averbeke	Tshwane University of Technology	084 5129647	vanaverbekew@tut.ac.za			?
	PROJECT TEAM					
J Denison	Umhlaba Group (Team leader)	082 5776481	jdenison@umhlabacg.co.za			Yes
Dr L Wotshela	Umhlaba Group	082 2548114	l.wotshela@umhlabacg.co.za			No
E Kruger	Umhlaba Group	082 8732289	erna@gracenet.co.za			Yes
H Smulders	Umhlaba Group	082 9673093	hsmulders@mtnloaded.co.za			Yes
Prof L van Rensburg	University of the Free State		Vrensbl.sci@ufs.ac.za	051 4012957		?
Dr M Hensley	University of the Free State			051 4012957		No
M de Lange	Socio-technical Interfacing	082 8076523	marna@global.co.za			Yes
M Botha	Independent	082 4694532	mariusb@vodamail.co.za			No

Name	Institution	Cell Phone	E-mail	Landline phone	Fax	ATTENDING ?
	PARTICIPANTS INVITED					
Anne Hurley	UKZN – Centre for Adult Education		HarleyA@ukzn.ac.za	033 2605911		Yes
Dr Lean vd Westhuizen	UFS Agri Centre	083 4539364	mvdw@telkomsa.net			?
Fanie Pethla	Agri-seta			012 3251655		?
Jeanette Sprinkhuizen	National Dept of Agriculture		JeanetteSp@nda.agric.za	012 319 7068		Yes
Herman van Deventer	Specialist consultant / Agri-seta	083 6290662	hcvd@yebo.co.za			Yes
Dr. Peter Reid	Lowveld College of Agriculture	076 834 3260	reid@laeveld1.agric.za	013 - 7533064	013 - 755 1110	?
Mr. Obie Oberholzer	Lowveld College of Agriculture	072 225 5564	obie@laeveld1.agric.za	013 - 7533064	013 - 755 1110	?
Mr. Danie le Roux	Lowveld College of Agriculture	082 455 4200	danie@laeveld1.agric.za	013 - 7533064	013 - 755 1110	?

Qualifications for Trades and Occupations

Water Harvesting & Conservation Workshop

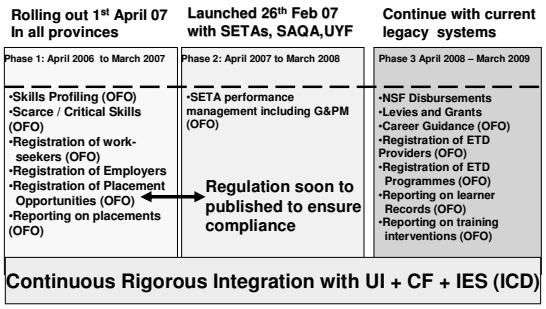
Acknowledgement

- Slides used from various sources, including
  - DoL
  - GTZ
  - CETA
- Reflects current understanding

New Direction

- Defined and Labour Market Focused
  - Scares occupations
  - Focus on employability
- Organising Framework for Occupations (OFO) aligned
- Quality Council for Trades and Occupations (QCTO)
  - Qualification design process and structure
  - Quality assurance

Employment Services System Roll Out Phases



The Organising Framework for Occupations

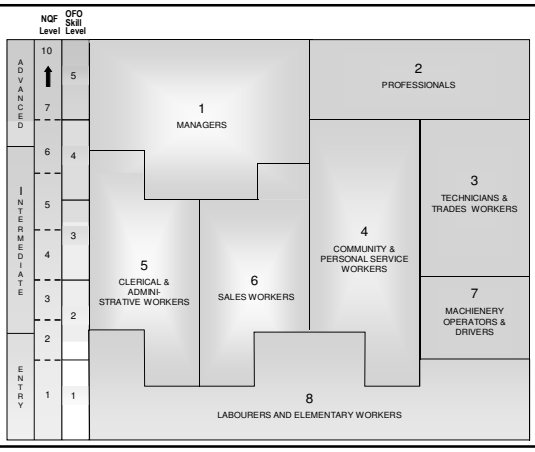
(OFO)

The OFO

- National list of occupations
- Comprehensive list that reflect the total employment situation
- Initiated by DoL
- International benchmark
- Based on ANZSCO – occupational framework developed by Australia and New Zealand
- Accepted as reference by the ILO
- Adapted for SA specific occupations

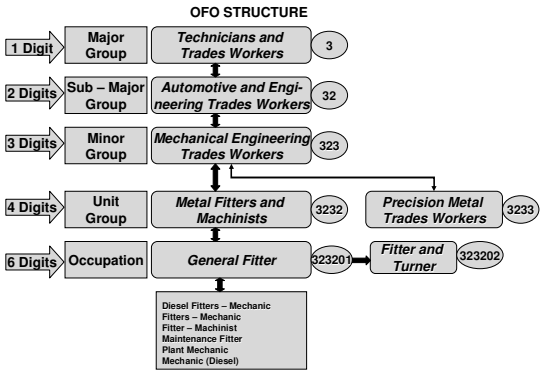
Application

- National database on employment trends
- International benchmarking
- SETA planning and reporting
  - WSP
  - SSP
  - Scares occupations and critical skills
- Occupational Career Path Framework
  - Curriculum and Qualification Development
  - Registration of Learnership, Apprentices
  - Development and registration of occupational qualifications



Understanding Occupations

- **"Job"** is seen as a set of roles and tasks designed to be performed by one individual for an employer (including self-employment) in return for payment or profit.
- **"Occupation"** is seen as a set of jobs or specialisations whose main tasks are characterised by such a high degree of similarity that they can be grouped together for the purposes of the classification.



Unit Group Descriptor: Metal Fitters and Machinists

- METAL FITTERS AND MACHINISTS fit and assemble the fabricated metal parts into products, and set up machining tools, production machines and textile machines, operate machining tools and machines to shape metal stock and castings.

Skills Sets / Tasks Include (extract)

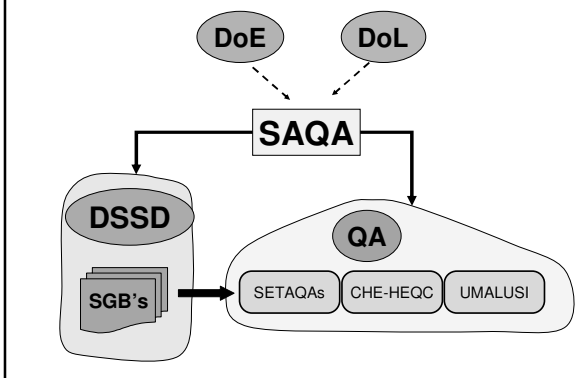
- Checking fabricated and assembled metal parts for accuracy, clearance and fit using precision measuring instruments
- Cutting, threading, bending and installing hydraulic and pneumatic pipes and lines
- Diagnosing faults and performing operational maintenance of machines, and overhauling and repairing mechanical parts and fluid power equipment
- Fitting fabricated metal parts into products and assembling metal parts and sub-assemblies to produce machines and equipment
- Forming metal stock and castings to fine tolerances using machining tools to press, cut, grind, plane, bore and drill metal

OFO Principles

- Formal structure – with levels and defined groups
- Occupations within specific groups has a defined focus – golden threat
- Defined skill and task sets within a group
- International comparability cannot be compromised
- Establish the basis for Career Path Frameworks

The Quality Council for Trades and Occupation

Occupational
Qualification
Development



SAQA

- SAQA will remain the Qualifications Authority of South Africa
- Maintain registration of all NQF aligned qualifications
- Current unit standard and qualification registration process is the only legal process
- Changes to legislation currently in process in the form of the revised Skills Development Bill
- Occupational Qualifications regarded as Pilots

Current SAQA Qualification Registration

- Meet SAQA criteria i.t.o.
  - Credits (eg. Min of 120 credit for National Certificates)
  - Core, Fundamental and Elective
  - Fundamental must meet SAQA rules and criteria set for specific NQF levels
    - Eg. Mathematics 16 credits
    - Eg. Communication 20 credits

Current SAQA Qualification Registration

- Baskets of unit standards for defined skills programs must be registered as part of a qualification
- Add as elective component to existing qualification
- Amendment of list of core unit standards implies new qualification

Key Concerns

- Learners achieve Core and Elective but not Fundamentals, do not complete qualification.
- Current qualifications not fit for purpose: disjuncture with occupational realities
- Fundamentals places weighting burden on qualifications

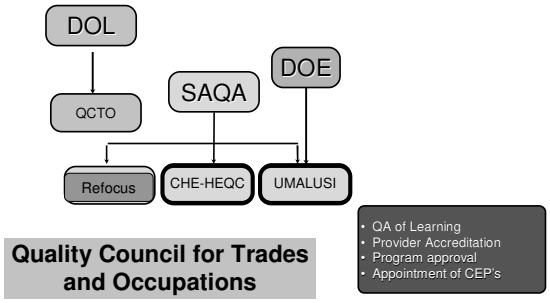
Ceta selected slide

Quality assurance concerns

- Too many SETA ETQAs - Confusion about their scope of coverage
- Cumbersome processes for providers and workplaces
- Current emphasis is on accreditation processes rather than quality of learning
- No consistent approach to assessment - assessment have little credibility in the labour market
- Lack of good integrated summative assessment for the occupational competence

Ceta Selected Slide

Quality Assurance



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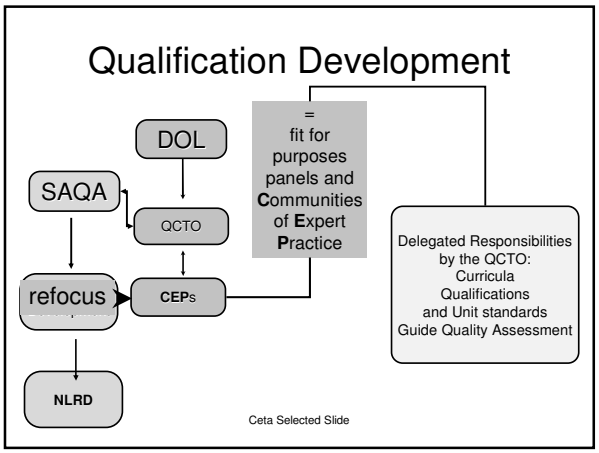
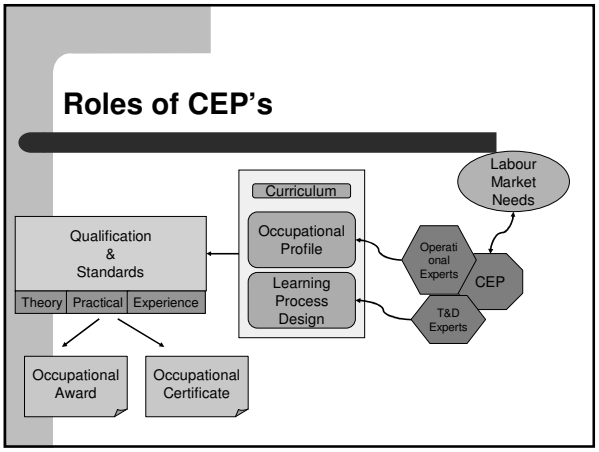
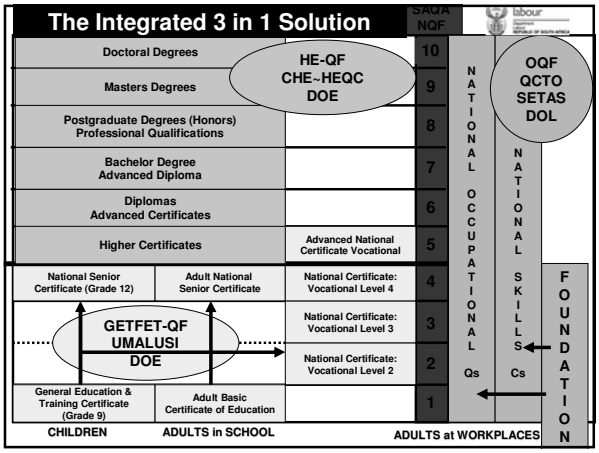
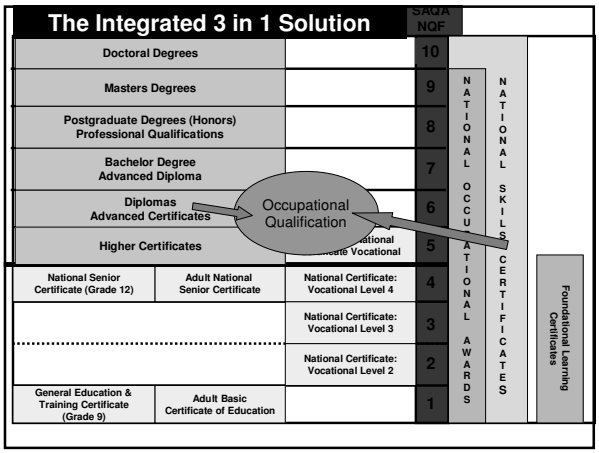

Qualification Development
DOL
SAQA
QCTO
refocus
CEPs
NLRD
=
fit for purposes panels and Communities of Expert Practice
Delegated Responsibilities by the QCTO:
Curricula
Qualifications
and Unit standards
Guide Quality Assessment
Ceta Selected Slide


Roles of CEP's
Curriculum
Occupational Profile
Learning Process Design
Labour Market Needs
Operational Experts
CEP
T&D Experts
Qualification & Standards
Theory
Practical
Experience
Occupational Award
Occupational Certificate

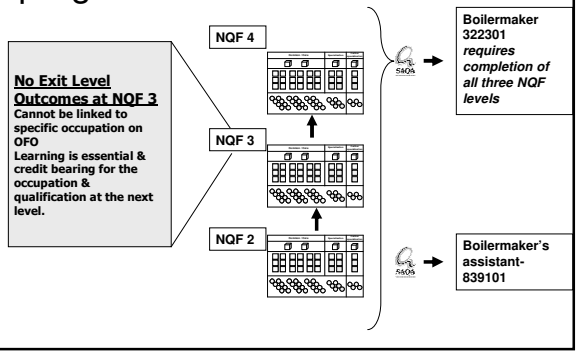

The Integrated 3 in 1 Solution
SAQA NQF
Doctoral Degrees
Masters Degrees
Postgraduate Degrees (Honors) Professional Qualifications
Bachelor Degree Advanced Diploma
Diplomas Advanced Certificates
Higher Certificates
HE-QF CHE~HEQC DOE
Advanced National Certificate Vocational
National Senior Certificate (Grade 12)
Adult National Senior Certificate
National Certificate: Vocational Level 4
National Certificate: Vocational Level 3
National Certificate: Vocational Level 2
GETFET-QF UMALUSI DOE
General Education & Training Certificate (Grade 9)
Adult Basic Certificate of Education
10
9
8
7
6
5
4
3
2
1
NATIONAL OCCUPATIONAL Qs
NATIONAL SKILLS Cs
OQF QCTO SETAS DOL
FOUNDATION
CHILDREN
ADULTS in SCHOOL
ADULTS at WORKPLACES



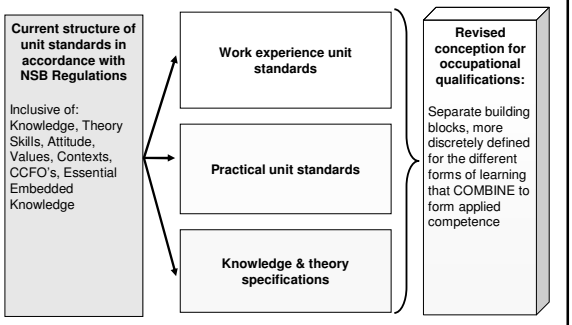
OCCUPATIONAL QUALIFICATIONS

- National Occupational Award
  - Achievement of full occupational competence required to practice an occupation in the labour market
- National Skills Certificate
  - Achievement of a distinct skills set
    - Recognisable and distinct unit
    - Specialised context
    - Specialised occupational role

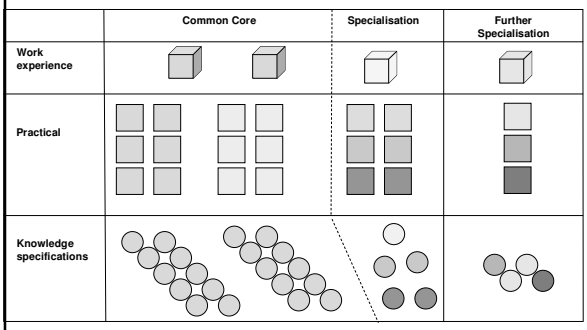
Reconfiguring qualification progression



Reconfiguring unit standards to meet these needs



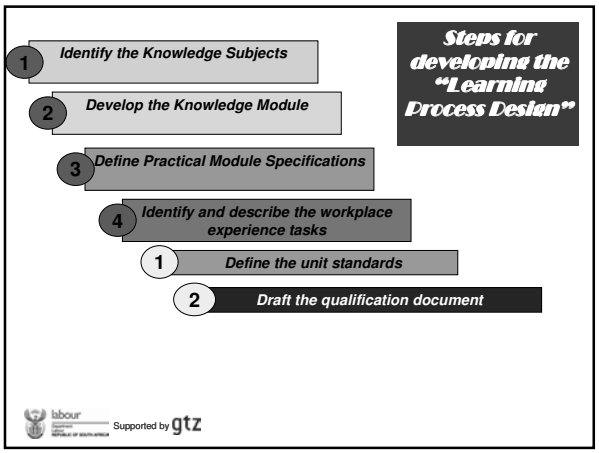
Reconfiguring the qualification

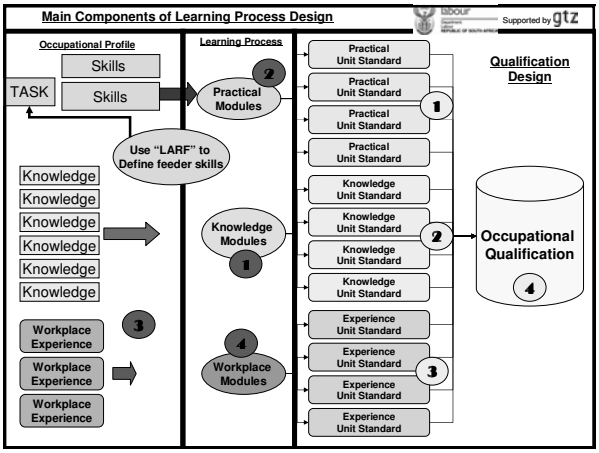


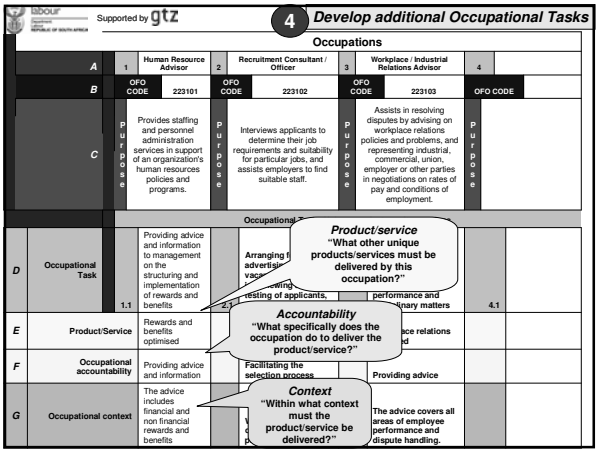
Steps for developing the Occupational Profile

1. Confirm the Occupational Purpose
2. Allocate Unit Group Tasks
3. Unpack unit group tasks
4. Develop additional Occupational Tasks
5. Define the required skills and Knowledge
6. Define the relevant workplace experience
7. Define occupational tasks at lower NQF levels
8. Define knowledge, skills and workplace experience at lower NQF levels
9. Define general information regarding the occupation

Supported by gtz


Steps for developing the "Learning Process Design"
1 Identify the Knowledge Subjects
2 Develop the Knowledge Module
3 Define Practical Module Specifications
4 Identify and describe the workplace experience tasks
1 Define the unit standards
2 Draft the qualification document
Supported by gtz


Main Components of Learning Process Design
Supported by gtz
Occupational Profile
Learning Process
Qualification Design
Skills
TASK
Skills
Use "LARF" to Define feeder skills
Knowledge
Knowledge
Knowledge
Knowledge
Knowledge
Knowledge
Workplace Experience
Workplace Experience
Workplace Experience
Practical Modules
Knowledge Modules
Workplace Modules
Practical Unit Standard
Practical Unit Standard
Practical Unit Standard
Practical Unit Standard
Knowledge Unit Standard
Knowledge Unit Standard
Knowledge Unit Standard
Knowledge Unit Standard
Knowledge Unit Standard
Experience Unit Standard
Experience Unit Standard
Experience Unit Standard
Experience Unit Standard
Occupational Qualification


Supported by gtz
4 Develop additional Occupational Tasks
Occupations
Human Resource Advisor
Recruitment Consultant / Officer
Workplace / Industrial Relations Advisor
OFO CODE 223101
OFO CODE 223102
OFO CODE 223103
Provides staffing and personnel administration services in support of an organization's human resources policies and programs.
Interviews applicants to determine their job requirements and suitability for particular jobs, and assists employers to find suitable staff.
Assists in resolving disputes by advising on workplace relations policies and problems, and representing industrial, commercial, union, employer or other parties in negotiations on rates of pay and conditions of employment.
Occupational Task
Product/Service
Occupational accountability
Occupational context
Providing advice and information to management on the structuring and implementation of rewards and benefits
Rewards and benefits optimised
Providing advice and information
The advice includes financial and non financial rewards and benefits
Facilitating the selection process
Providing advice
The advice covers all areas of employee performance and dispute handling.
Product/service "What other unique products/services must be delivered by this occupation?"
Accountability "What specifically does the occupation do to deliver the product/service?"
Context "Within what context must the product/service be delivered?"

D	Occupational Task 1.1		Providing advice and information to management on the structuring and implementation of rewards and benefits
			Underpinning Knowledge
E	***Product or Service***	**Employee Rewards and benefits optimised**	Definition of compensation
			Forms of Pay
			Remuneration models
			Remuneration Strategies
			Sources of labour market competitive advantage
			Principles of organisational structuring
			Principles of job grading
			The concept of internal and external equity and fairness in rewards and remuneration
			Use of market pay surveys
			Skills
F	***Occupational Accountability***	**Providing advice on employee rewards and benefits**	Conducts research regarding benefits and remuneration
			Compiles comparative studies on remuneration and benefits issues
			Develops remuneration strategies
			Presents proposals on rewards and benefits to management
			Workplace Experience
G	***Occupational Context***	**The advice includes financial and non financial rewards and benefits**	Analyses the efficiency of the organisational incentive schemes
			Compares the organisational wage curves with industry standards
			Identifies potential improvement areas for a specific organisations remuneration system.
			Recommends actions to make improvements in remuneration and benefits of employees in a specific organisation
			What must be used/known in the organisation in gaining the experience?
			The requirements of the specific industry charter and the targets agreed by the specific organisation
			The cost structure of the business
			The labour supply situation in the business
			The details of company remuneration policies and procedures
			How the specific remuneration packages in the business are put together
			The specific business plan of the organisation

What must people know in order to deliver the product/service?

What are the skills required to execute the accountabilities?

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D	Occupational Task 1.1		Providing advice and information to management on the structuring and implementation of rewards and benefits
			Underpinning Knowledge
E	***Product or Service***	**Employee Rewards and benefits optimised**	Definition of compensation
			Forms of Pay
			Remuneration models
			Remuneration Strategies
			Sources of labour market competitive advantage
			Principles of organisational structuring
			Principles of job grading
			The concept of internal and external equity and fairness in rewards and remuneration
			Use of market pay surveys
			Skills
F	***Occupational Accountability***	**Providing advice on employee rewards and benefits**	Conducts research regarding benefits and remuneration
			Compiles comparative studies on remuneration and benefits issues
			Develops remuneration strategies
			Presents proposals on rewards and benefits to management
			Workplace Experience
G	***Occupational Context***	**The advice includes financial and non financial rewards and benefits**	Analyses the efficiency of the organisational incentive schemes
			Compares the organisational wage curves with industry standards
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			Recommends actions to make improvements in remuneration and benefits of employees in a specific organisation
			What must be used/known in the organisation in gaining the experience?
			The requirements of the specific industry charter and the targets agreed by the specific organisation
			The cost structure of the business
			The labour supply situation in the business
			The details of company remuneration policies and procedures
			How the specific remuneration packages in the business are put together
			The specific business plan of the organisation

What must the person be able to do in the workplace to demonstrate an ability to apply the skills in the workplace?

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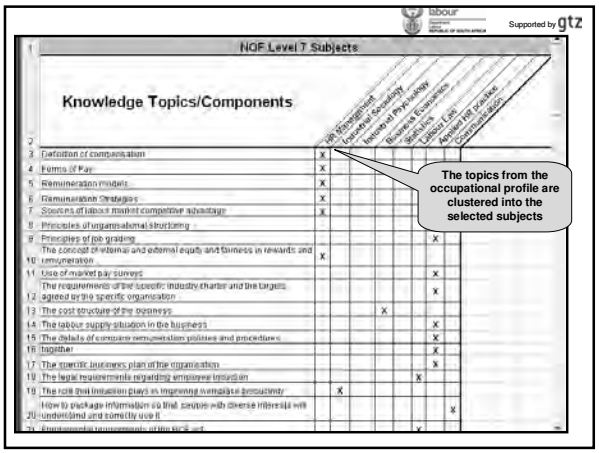
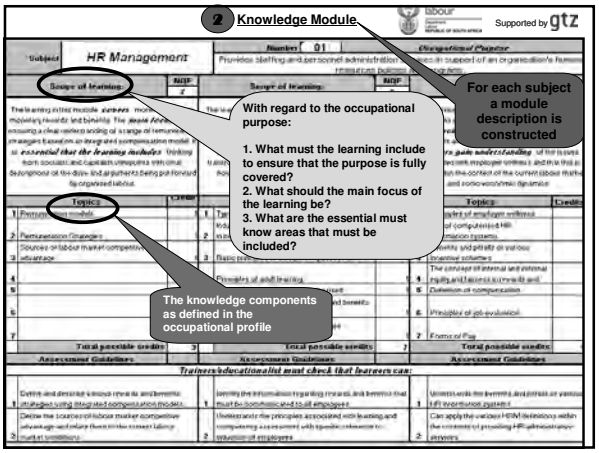
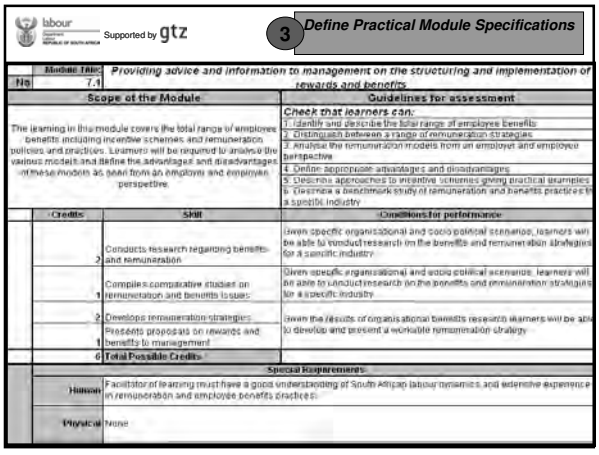
7 *Define occupational tasks at lower NQF levels*

	Human Resource Advisor						OFO Code 223101		
	Occupational Purpose								
	Provides staffing and personnel administration services in support of an organisation's human resources policies and programs								
	Occupational tasks Per NQF level								
	NQF Levels		Level 7		Level 6		Level 5		Level 4
D	Occupational Task	7.1	**Providing advice and information to management on the structuring and implementation of rewards and benefits**	6.1	**Investigating and evaluating alternative ways of structuring and implementing rewards and benefits**	5.1	**Developing projects and plans for the implementation of changes to employee rewards and benefits**	4.1	
E	Product/Service		Employee Rewards and benefits optimised		Alternative rewards and benefits identified		Rewards and benefit changes implemented		
F	Occupational accountability		Providing advice on employee rewards and benefits		Investigating and evaluation alternative rewards and benefits options		Developing action plans to implement changes to rewards and benefits		
G	Occupational context		The advice includes financial and non financial rewards and benefits		Alternatives covers financial and non financial rewards		Action plans are approved and reviews and reports delivered		
D	Occupational Task	7.2	**Arranging the induction of staff and providing information on conditions of service, salaries and promotional opportunities**	6.2	**Evaluating the effectiveness of the transfer of knowledge regarding employee remuneration and benefits**	5.2	**Conducting employee induction on issues relating to rewards and benefits**	4.2	
E	Product/Service		Induction information provided		Induction effectiveness evaluated		Employee induction conducted		
F	Occupational accountability		Coordinating and controlling the quality of induction information		Evaluating the effectiveness of knowledge transfer during employee induction		Conducting employee induction sessions		


Supported by gtz
NQF Level 7 Subjects
Knowledge Topics/Components
HR Management
Industrial Psychology
Business Economics
Statistics
Labour Law
Applied HR Practice
Communication
Definition of compensation
Forms of Pay
Remuneration models
Remuneration Strategies
Sources of labour market competitive advantage
Principles of organisational structuring
Principles of job grading
The concept of external and external equity and fairness in rewards and remuneration
Use of market pay surveys
The requirements of the specific industry charter and the targets agreed by the specific organisation
The cost structure of the business
The labour supply situation in the business
The details of company remuneration policies and procedures
together
The specific business plan of the organisation
The legal requirements regarding employee retention
The role that motivation plays in improving workplace productivity
How to package information so that people with diverse interests will understand and correctly use it
The topics from the occupational profile are clustered into the selected subjects


2 Knowledge Module
Supported by gtz
Subject
HR Management
Number 01
Scope of learning
NQF
Topics
Credits
Total possible credits
Assessment Guidelines
Trainer/educationalist must check that learners can:
For each subject a module description is constructed
With regard to the occupational purpose:
1. What must the learning include to ensure that the purpose is fully covered?
2. What should the main focus of the learning be?
3. What are the essential must know areas that must be included?
The knowledge components as defined in the occupational profile


Supported by gtz
3 Define Practical Module Specifications
Module Title: Providing advice and information to management on the structuring and implementation of rewards and benefits
No 7.1
Scope of the Module
The learning in this module covers the total range of employee benefits including incentive schemes and remuneration policies and practices. Learners will be required to analyse the various models and define the advantages and disadvantages of these models as seen from an employee and employer perspective.
Guidelines for assessment
Check that learners can:
1. Identify and describe the total range of employee benefits
2. Distinguish between a range of remuneration strategies
3. Analyse the remuneration models from an employer and employee perspective
4. Define appropriate advantages and disadvantages
5. Describe approaches to incentive schemes giving practical examples
6. Develop a benchmark study of remuneration and benefits practices in a specific industry
Credits
Skill
Conditions for performance
2 Conducts research regarding benefits and remuneration
Given specific organisational and socio political scenarios, learners will be able to conduct research on the benefits and remuneration strategies for a specific industry
1 Compiles comparative studies on remuneration and benefits issues
Given specific organisational and socio political scenarios, learners will be able to conduct research on the benefits and remuneration strategies for a specific industry
2 Develops remuneration strategies
Given the results of organisational benefits research learners will be able to develop and present a workable remuneration strategy
1 Presents proposals on rewards and benefits to management
6 Total Possible Credits
Special Requirements
Human Facilitator of learning must have a good understanding of South African labour dynamics and extensive experience in remuneration and employee benefits practices.
Physical None

In relation to the products and services ask:
1. " What is the common thing that is represented in each of the products/services?"
2. State as a Module Title

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4 Identify and describe the workplace experience tasks

Module Number	Module Title:	Products/Services	NQF Level
01	Rewards and Benefits	Employee Rewards and benefits optimised	7
		Alternative rewards and benefits identified	6
		Rewards and Benefit changes implemented	5

Scope of the module NQF 7	Scope of the Module NQF 6	Scope of the Module NQF 5
Learners must be exposed to all the information regarding rewards and benefits in the organisation. This should include the full range of packages across all bargaining units and those perks that fall outside of the bargaining units. The main focus of the experience will be the analysis of the current range of rewards and benefits and the development of improvement recommendations. It is essential that this analysis should be aligned with the organisational strategic plans and the prevailing labour market dynamics.	Learners must be exposed to a range of possible rewards systems. The focus of the experience is to enable the learners to develop criteria for good reward systems and then collect sufficient data regarding the current systems to allow them to evaluate the current systems against the criteria	Learners must be exposed to the organisational HR record system and the processes and procedures of making changes to these systems to cater for new/modified rewards and remuneration. The focus of the experience must be on the ability to use the systems and adhere to the protocols, policies and procedures.

Experience	Credits	Experience	Credits	Experience	Credits
Analyses the efficiency of the organisational incentive schemes	1	Collects data on the effective use of current reward systems	2	Makes changes to rewards and benefits records to effect changes	1
Compares the organisational wage curves with industry standards	2	Determine employees' perceptions regarding rewards and benefits	4	Reconciles HR records	2
Identifies potential improvement areas for a specific organisations remuneration system	3	Structures current reward and benefit information into a usable presentation	2		
Recommends actions to make improvements in remuneration and benefits of employees in a specific organisation	1				
Total Possible credits	6	Total possible credits	8	Total possible credits	4
Special Conditions		Special Conditions		Special Conditions	
None				Before and after wage negotiations	

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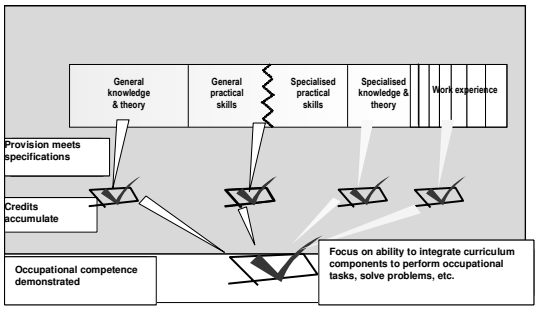
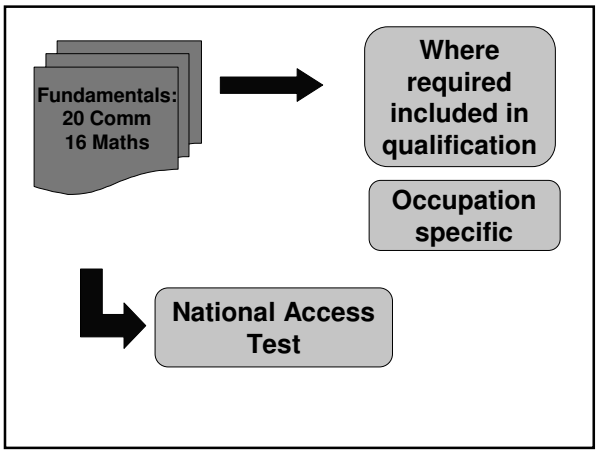
Curriculum, accreditation & assessment



Providers accredited for programmes that lead to OQF qualifications or components of such qualifications

Summary of changes

- Current
  - Qualifications and unit standards drive system
    - Developed in SGBs
    - Registered on NQF
  - Constituent providers accredited as institutions for learning programmes
  - Assessors / moderators / verifiers registered
- Future
  - Occupations (OFO) drive system
  - Qualifications and curriculum frameworks
    - Developed in CEPs
    - Registered on NQF by QCTO
  - Specify:
    - Knowledge, applied and workplace learning
    - Assessments
  - Focus on programme approval and assessment
    - Light touch accreditation of providers



Assessment of learning

- Formative assessment on all unit standards
  - Knowledge
  - Applied practical skills
  - Workplace experience – specialisation
- Summative assessment
  - Assessment centre
  - Integrated assessment

ANNEX 2

MINUTES OF WORKSHOP 1
26 MAY 2008

Water Research Commission

Minutes of Meeting

Project Title:	Development of a comprehensive learning package for education on the application of water harvesting and conservation
WRC Project No:	K//5/1776/4
Umhlaba Project No:	UCG054
Time and Date:	2.30 pm 26 May 2008
Location:	Elizabeth Thobejane's Office, Laboria House, Pretoria

Present:

Liz Thobejane	Dept of Labour (DoL)
Shaafiq Fredericks	Dept of Labour
Tsholofelo Mokotedi	Dept of Labour
Jeanette Sprinkhuizen	National Dept of Agriculture (NDA)
George Mathe	National Dept of Agriculture
Dr Andrew Sanewe	Water Research Commission (WRC)
Heman van Deventer	Independent Consultant
Jonathan Denison	Umhlaba Consulting Group
Fransa Ferrera	UNISA (in collaboration with RIENG)
Chris Stimie	Rural Integrated Engineering (RIENG)

Purpose of Meeting:

The meeting was called by the Umhlaba Consulting Group in collaboration with the Water Research Commission to discuss accreditation within the 'Trade and Occupational' framework for the WRC funded project (details above). The intention was to commence the process of establishing a 'Community of Experts' to outline the curriculum framework for an occupation or specialisation in water harvesting and conservation. RIENG have a related WRC funded assignment and were invited by WRC to attend.

DISCUSSION

Summary

1. The Dept of Labour and Dept of Agriculture welcomed the opportunity to collaborate with the WRC, the materials development teams (Umhlaba, RIENG) and support the initiative.

2. The legislative process of establishing the Quality Council for Trade and Occupations is underway, with submission before Cabinet on 28 May 2008 (ie. tomorrow). The legal basis is expected be concluded by Nov 2008. The QCTO will be established during 2009 and is expected to be fully functional by 2010. Thus, the timing for this collaborative initiative between WRC, DoL and DoA is positive, but remains in a pilot phase until the legislative process is finalised.

3. There is a need to clarify whether the learning materials are developed as an agricultural specialisation (or module) within a facilitation programme (certificate / diploma) or vice-versa. In short, this means clarity is needed on whether the focus is to develop a curricula centred around either agricultural advisors or alternatively centred around community practitioners. This needs to be explored fully before the Community of Experts is established and requires a preparatory workshop session.

4. The meeting agreed that the process to be followed is:

    a) Establish a Reference Group and hold a 1-day workshop and decide on where the occupationally directed learning materials will be located within the Organisational Framework of Occupations (OFO). This will be funded by WRC, in collaboration with Umhlaba and RIENG. Herman van Deventer will facilitate this session.

    b) At the same 1-day workshop discuss and recommend, to the Dept of Labour, a 'Pilot Community of Experts Panel'. The DoL will then be able to fund further sessions that the Pilot Community of Experts Panel (Pilot CEP) will need to hold.

    c) After approval by DoL of the Pilot CEP, hold a second 2-day workshop, to design the learning process and develop the curriculum content and modules (knowledge, practical and work experience). These will relate to the water-harvesting and conservation occupation targeting NQF 5/6 (SAQA NQF 10 level system). This may be either a Specialisation or a Unit Group, or a Specialisation within a Unit Group.

    d) The materials development process by the WRC-funded teams can then be structured within the QCTO setup ensuring the WRC's objective to have materials that can be accredited, and compliant with DoL's objective of systematic generation of standards in a more accessible and simpler manner than has been the case with the Unit Standards approach.

ACTIONS

Item	Description	Action	Due Date
1	Compile and circulate e-mails to meeting participants to arrive at names of the proposed WRC-Occupational Reference Group.	Denison	28 May 08
2	Organise, invite WRC-Occupational Reference Group members, and fund the 1-day workshop to be held on the provisional date of 17 June 2008.	Dr Sanewe	3 June 08
3	Funding and sub-contract for the workshop facilitator to be organised by Umhlaba / RIENG.	Denison / Stimie	30 May 08
4	Letter or e-mail from WRC to Liz Thobejane (DoL) formally requesting DoL to participate in a process to develop the relevant occupational and curriculum framework in relation to the WRC-funded assignments on water harvesting and conservation.	Dr Sanewe	30 May 08

Minuted by:

Jonathan Denison
Umhlaba Consulting Group
jdenison@umhlabacg.co.za
043 7221246
082 5776481

ANNEX 3

DETAILS OF WORKSHOP 3
17 JUNE 2008

Water Research Commission

Minutes of Meeting

Project Title:	Development of a comprehensive learning package for education on the application of water harvesting and conservation
WRC Project No:	K//5/1776/4
Umhlaba Project No:	UCG054
Time and Date:	9.30am to 4:00pm 17 June 2008
Location:	ARC Offices, Weavind Park, Silverton, Pretoria

1. Present:

The attendance register is attached overleaf.

2. Agenda:

Time	Purpose	Facilitator
9:30 – 9:45	Introductions and objectives	Jonathan Denison
9:45 – 10:45	Overview of Organising Framework of Occupations	Herman van Deventer
10:45 – 12:00	Options and decision on WH&C Occupations in relation to OFO	Herman van Deventer
12:00 – 12:30	Recommendation of names to Dept of Labour for Community of Expert Practice	Jonathan Denison
12:30 – 1:00pm	Process and timelines for next steps. Closure	Jonathan Denison
1:00 – 2:00	Lunch	
2:00 – 4:00 (Optional session)	Exploratory discussion of 3 WRC assignments on ways forward in relation to accreditation	Dr Andrew Sanewe (WRC)

3. Purpose of Meeting:

The meeting formed an Accreditation Reference Group for Water Harvesting and Conservation, as delegated by the Department of Labour, following a meeting on 26 May 2008 at the DoL offices, in Pretoria.

The list of delegates was agreed with the DoL and the meeting was constituted in accordance with the process outlined by the DoL. This is set out in the minutes of the meeting held on 26 May 2008 and accompanying e-mails, not included here. The QCTO required a Community of Expert Practice (CEP) to be established in order to decide on the scope of the occupation (for a rainwater harvesting practitioner) and on curricula details. However, in order to establish the CEP, the Department of Labour instructed that a Reference Group was first convened in order to address the following two issues:

Item a: The location of the occupationally-directed learning materials within the Organisation Framework of Occupations (OFO).

Item b: The composition of the pilot "Community of Expert Practice" to be recommended to the Department of Labour

4. Resolutions:

4.1) Item a: The location and naming of the occupations with the Organising Framework of Occupations was agreed as follows (taken from the workshop report by Human Capital Resource Development CC who facilitated the session; report dated 19 June 08):

The meeting concluded that the persons receiving training in the three focus areas should have a basic education as *Agricultural Technicians*. The further training will qualify them in specialised areas as:

- *Water Harvesting and Conservation Technicians*
- *Household Food Security Advisors(see note below)*
- *Irrigation Extensionist*

Agricultural Technicians is an OFO listed occupation (311101) but the three specialization areas will have to be included on the OFO. The QCTO will be able to certify the learning outcomes as specialised Occupational learning linked to a General Qualification. The Qualifications will most possibly be certified as National Skills Certificates.

Note: In the case of the Household Food Security Advisors, an option that the Pilot CEP must consider is that instead of basic education as an agricultural technician, this specialised area could apply to those with basic education as a community worker (411701).

4.2) Item b: The names that were recommended to the Department of Labour for the Pilot Community of Expert Practice are shown in the table overleaf. Further details can be obtained from meeting organisers and participants if necessary.

Recommendations for the Pilot Community of Expert Practice (CEP) for Water Harvesting and Conservation Practitioners

WRC and Project Team Leaders:

Dr Andrew Sanewe	Water Research Commission
Jonathan Denison	Umhlaba Consulting Group
Chris Stimie	Rural Integrated Engineering
Dr Joe Stevens	University of Pretoria

Technical Specialists – Soil and Water

Prof Wim van Averbeke	Tshwane University of Technology
Simon Letsoale	Tshwane University of Technology
Marna de Lange	Socio-technical interfacing
Prof Leon van Rensburg	University of Free State – Dept of Agriculture
Dr Hendrik Smith	Agricultural Research Council

Technical Specialists - Education

Elsa Albertse	Research and Nutrition
Karen Kaiser	University of KwaZulu-Natal
Joseph Foli	Owen Sithole Agricultural College
Fransa Ferrera	UNISA
Alice Barlow Zambodla	SAIDE (NGO)
Jeanette Sprinkhuizen	National Department of Agriculture

Training and Facilitation Specialists

Mike Fabar	Medical Research Council (Nutrition)
Erna Kruger	Independent Consultant
Thembi Ncobo	Agricultural Research Council (Sustainable Livelihoods)
Marius Botha	Independent consultant
Dr Piet du Toit	University of Pretoria

4.3) A short motivation would be submitted to the Department of Labour with the intention of prompting the formation and funding of the Pilot CEP by the Department of Labour.

4.4) The first workshop of the Pilot CEP would best involve 6 or 8 of the recommended members of the CEP, not the whole CEP, and would likely take place over 4 days. The aim would be to structure the curricula outline and then distribute this for active comment by the broader CEP grouping. This approach would be recommended to the Department of Labour as would be more likely to result in rapid progress of the Pilot CEP functions.

4.5) The Pilot CEP would meet as a single body to address all three of the occupations as set out in item 4.1) of these minutes.

Minuted by:

Jonathan Denison
Umhlaba Consulting Group
jdenison@umhlabacg.co.za
043 7221246
082 5776481

Further information in the accreditation discussions can be obtained from Dr Andrew Sanewe of the Water Research Commission (012 3309047 / andrews@wrc.org.za), notably the full workshop report prepared by Human Capital Resource Development CC, dated 19 June 2008.

Jonathan Denison

From: Jonathan Denison [jdenison@umhlabacg.co.za]

Sent: 12 June 2008 01:55 PM

To: 'elizabeth.thobejane@labour.gov.za'; 'shaafig.fredericks@labour.gov.za'; 'tsholofelo.mokotedi@labour.gov.za'; 'Herman'

Cc: 'Andrew Sanewe'

Subject: Accreditation Reference Group Meeting - 17 June 08

Dear Colleagues,

Following Dr Andrew Sanewe's invitation to the workshop (attached) the programme for the day is set out below. Please note the start time has been moved from 8:30 am to 9:30am to accommodate flights, with due consideration of time needed to achieve outcomes.

The workshop will be split into 2 parts.

Morning – addressing accreditation issues from the last meeting with DoL / DoA / WRC. I am sending the minutes of the last meeting to ensure everyone has the background. The objectives the morning session are set out in the attached minutes, Items 4a) and 4b).

Afternoon – more internal WRC project session to discuss 3 related assignments vis-à-vis accreditation. This is optional for DoL / DoA and other non-project colleagues and you would be welcome. The objectives and process for the afternoon session will be established at the start of the afternoon session, handled by Dr Sanewe.

Agenda for Workshop of 17 June 08.

VENUE:
Kopano Hall,
Institute for Agricultural Engineering,
Cresswell Street,
Weavind Park, Pretoria

Time	Purpose	Facilitator
9:30 – 9:45	Introductions and objectives	Jonathan Denison
9:45 – 10:45	Overview of Organising Framework of Occupations	Herman van Deventer
10:45 – 12:00	Options and decision on WH&C Occupations in relation to OFO	Herman van Deventer
12:00 – 12:30	Recommendation of names to Dept of Labour for Community of Expert Practice	Jonathan Denison
12:30 – 1:00pm	Process and timelines for next steps. Closure	Jonathan Denison
1:00 – 2:00	Lunch	
2:00 – 4:00 (Optional session)	Exploratory discussion of 3 WRC assignments on ways forward in relation to accreditation	Dr Andrew Sanewe (WRC)

Please contact Dr Sanewe (083 2687857) for any queries regarding transport and accommodation.
Please contact Chris Stimie (082 4634535) should you need directions to the venue.

We look forward to seeing you there.

Best regards,
Jonathan
cc'd separately to all other's attending to avoid SPAM filters

Jonathan Denison
Umhlaba Consulting Group
Development Strategy and Support
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Fx: 27 (0)86 515 8941
Em: jdenison@umhlabacg.co.za

-----Original Message-----
From: Andrew Sanewe [mailto:andrews@wrc.org.za]
Sent: 10 June 2008 08:41 AM
To: elizabeth.thobejane@labour.gov.za; shaafig.fredericks@labour.gov.za; tsholofelo.mokotedi@labour.gov.za
Cc: Jonathan Denison; Herman
Subject: Invitation to attend a Reference Group Meeting on the development of curriculum

Dear colleagues,

As discussed in our meeting in May 2008, please find attached the invitation to attend the reference group meeting on the curriculum development of WRC training projects. The meeting will take place at the Agricultural Research Council - Institute for Agricultural Engineering offices in Silverton beginning at about 8:30 and should end at about 16:00. Jonathan Denison will send a detailed programme to you shortly.

Kind regards,

Andrew Sanewe (PhD)
Research Manager
Water Research Commission
P.O. Bag X03
Gezina 0031
Pretoria
Tel: 012 330 9047
Fax: 012 331 1136
E-mail: andrews@wrc.org.za

Attendance

Name	Institution Company	Cellphone	Landline	Fax	e-mail
ERNA KRUGER	Pptg. RIEng, Umhlaba	0828732289	—	—	erna@gracenet.co.za.
Franso Ferreira	UNISA	0827638081	012 352 4251/5	012 3524270	ferefsm@unisa.ac.za
Chris Stimie	RIEng	0824694535	012-8045016	012-8045016	dir@rieng.co.za
Marna de Lange	STI	0828076523	-	0866186993	marna@global.co.za
Jeanette Sprinkhuyz	DoAgric.	—	012319 7068	012 319 6851	jeanetteSp@nda.agric.za.
George Mathye	Dept. Agric.	073 1661 797	012 319 6658	012 319 6851	GeorgeMa@nda.agric.za
Jan Potgieter	GDACE	082 921 1507	012-325 5146	012-328 4125	jan.potgieter@gauteng.gov.za.
JOE STEVENS	UNIV PTA	0824778847	012 - 4203247	012 4203247	joe.stevens@up.ac.za
JOSEPH FOLI	OSCA (PDA)	0823126614	035-7951345	035-7951379	foli@osca1.kzntl.gov.za
Tsholofelo Mokoteli	Dept of Labour	0764411761	(012)309 4325	(012) 309 4597	tsholofelo.mokoteli@labour.gov.za
Andrew Smeve	WRC	0834602981/ 076 282 7061	012 3309047	012 331 1136	andrews@wrc.org.za
Jonathan Denison	Umhlaba Consulting Group	082 5776481	043 7221246	043 7437374	jdenison@umhlabacg.co.za
Herman van Deventer					fbuys@ndweb.co.za
Frans Herman Buys	Dept Agric MP	0828986527			
Alice Barlow-Zambodla	SAIDE	0784608376	011-4032813	011-4032814	alicebz@saide.org.za

WATER RESEARCH COMMISSION

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Gezina
0031 SOUTH AFRICA

TEL: (012) 330-9047
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International code +271

WEBSITE: http://www.wrc.org.za

Enquiries: Dr A J Sanewe

E-mail: andrews@wrc.org.za

Date: 6 June 2008

Department of Labour:

Ms Elizabeth Thobejane
Executive Manager: SETA Support
E-mail: elizabeth.thobejane@labour.gov.za

Mr Shaafiq Fredericks
E-mail: shaafiq.fredericks@labour.gov.za

Ms Tsholofelo Mokotedi
E-mail: tsholofelo.mokotedi@labour.gov.za

RE: INVITATION TO PARTICIPATE IN REFERENCE GROUP MEETING TO DEVELOP A CURRICULM FRAMEWORK IN THE AREA OF AGRICULTURAL WATER MANAGEMENT AND IN PARTICULAR WATER HARVESTING AND CONSERVATION AND FOOD SECURITY

Dear colleagues,

Following a meeting held at the Department of Labour (DoL) offices on Monday 26 May 2008, a process to develop the relevant occupational and curriculum framework for training material for Water Research Commission (WRC) projects has been discussed and agreed to by DoL, Department of Agriculture (DoA), WRC and its collaborating organizations. The WRC contracted various organizations to develop different training material packages in agricultural water management for use by, amongst others, farmers and agricultural advisors. It is important for the WRC that the material developed is aligned for accreditation by the relevant authorities. The different projects under discussion are:

- "Development of a comprehensive learning package for education on the application of water harvesting and conservation (WH & C)" led by Umhlaba Consulting Group
- "Participatory development of training material for agricultural water use in homestead farming systems for improved livelihoods" led by Rural Integrated Engineering
- "Development of training material for extension in irrigation water management" led by University of Pretoria

As agreed in the meeting on 26 May 2008, a reference group will meet on Tuesday 17 June 2008 in Pretoria to discuss the way forward including the composition of the community of expert practitioners (CEP). The WRC has agreed to assist the process by financially supporting the reference group meeting. The WRC will cover the subsistence and travel costs for the invited reference group members arriving from outside the Gauteng province. As discussed in the meeting, our expectation is that the various government departments, i.e. labour and agriculture will then take the process further by supporting the CEP workshop etc. This request is for your participation in the reference group meeting and the subsequent process to develop the curriculum framework. I look forward to your favourable response to this request. Should you have any queries, please do not hesitate to contact me.

Yours Sincerely,

AJSanewe

……

Dr Andrew J Sanewe
Research Manager: Water Utilisation in Agriculture
Head: Water and Society

Jonathan Denison

From: Jonathan Denison [jdenison@umhlabacg.co.za]

Sent: 30 May 2008 08:41 AM

To: 'Andrews@wrc.org.za'; 'JeanetteSp@nda.agric.za'; 'Herman'; Chris Stimie (dir@rieng.co.za); 'Elizabeth Thobejane (HQ)'; 'shaafig.fredericks@labour.gov.za'; 'tsholofelo.mokotedi@labour.gov.za'; 'GeorgeMa@nda.agric.za'; Chris Stimie (dir@rieng.co.za)

Subject: Reference Group for Trade and Occupation in Water Harvesting

Dear Colleagues,

In our meeting on Monday 26 May 08, we agreed to form a Reference Group, who will meet on 17 June 08. The Reference Group needs to comprise people from the following institutions and competencies.

You are now requested to propose names of people who you think are well suited – under any or all of these headings. Please return e-mail to me and I will compile a list of all proposed names for a final, collective decision on composition. We probably need between 12 and 20 people on the Reference Group. If we have missed a category, please add.

Dept of Agriculture

Dept of Labour

Agricultural Research Council

Agri-SETA

Water Research Commission

Technical Experts - water harvesting and conservation engineering and design

Technical Experts – water harvesting and conservation agricultural production

Technical Experts – rural and agricultural development facilitation

Please send any nominations by Monday 2 June, latest.

Best regards,

Jonathan Denison
Umhlaba Consulting Group
Development Strategy and Support
Cell: 27 (0)82 5776481
Ph: 27 (0)43 722 1246
Fx: 27 (0)86 515 8941
Em: jdenison@umhlabacg.co.za

Jonathan Denison

From: Jonathan Denison [jdenison@umhlabacg.co.za]

Sent: 03 June 2008 11:11 AM

To: 'Jonathan Denison'; 'Andrews@wrc.org.za'; 'JeanetteSp@nda.agric.za'; 'Herman'; Chris Stimie (dir@rieng.co.za); 'Elizabeth Thobejane (HQ)'; 'shaafig.fredericks@labour.gov.za'; 'tsholofelo.mokotedi@labour.gov.za'; 'GeorgeMa@nda.agric.za'; Chris Stimie (dir@rieng.co.za)

Cc: 'Sandra Fritz'; 'marna@global.co.za'; 'erna@gracenet.co.za'; 'Heidi Smulders'

Subject: WRC / DoL - Trade and Occupation for Water Harvesting - Reference Group

Dear Colleagues,

I received feedback on the minutes and motivations for the Accreditation Reference Group from Chris Stimie, Andrew Sanewe and Jeanette Sprinkhuizen. I have added to the list to ensure full institutional coverage and technical competence.

The total number is around the reasonable maximum we discussed - and I trust you are in agreement that the proposed Reference Group composition is adequate for the purpose.

Should you have any additional names to propose, please send these directly to Dr Andrew Sanewe (andrews@wrc.org.za copied to sandraf@wrc.org.za) as they will be shortly be sending out invites for the workshop on 17 June 08.

Best regards,
Jonathan

Jonathan Denison
Umhlaba Consulting Group
Development Strategy and Support
Cell: 27 (0)82 5776481
Ph: 27 (0)43 722 1246
Fx: 27 (0)86 515 8941
Em: jdenison@umhlabacg.co.za

> -----Original Message-----
> **From:** Jonathan Denison [mailto:jdenison@umhlabacg.co.za]
> **Sent:** 27 May 2008 11:28 AM
> **To:** 'Andrews@wrc.org.za'; 'JeanetteSp@nda.agric.za'; 'Herman'; Chris Stimie (dir@rieng.co.za); 'Elizabeth Thobejane (HQ)'; 'shaafig.fredericks@labour.gov.za'; 'tsholofelo.mokotedi@labour.gov.za'; 'GeorgeMa@nda.agric.za'; Chris Stimie (dir@rieng.co.za)
> **Subject:** DRAFT Minutes of Meeting - WRC / DoL - Trade and Occupation for Water Harvesting
>
> Dear Colleagues,
>
> Thank you for the productive session yesterday. Your time and contribution is appreciated.
>
> Please find attached draft minutes of our meeting. I am not sure I have all of the terminology correct, particularly those highlighted in green so kindly send back any corrections / additions and I will then circulate the final, corrected minutes.
>
> Regards,
> Jonathan
> *(Chris please forward to Fransa as I don't have her e-mail address)*
>
> **Jonathan Denison**
> **Umhlaba Consulting Group**
> **Development Strategy and Support**
> Cell: 27 (0)82 5776481
> Ph: 27 (0)43 722 1246
> Fx: 27 (0)86 515 8941
> Em: jdenison@umhlabacg.co.za
>
> > -----Original Message-----
> > **From:** Jonathan Denison [mailto:jdenison@umhlabacg.co.za]
> > **Sent:** 23 May 2008 09:12 AM
> > **To:** 'Andrews@wrc.org.za'; 'JeanetteSp@nda.agric.za'; 'Herman'; Chris Stimie (dir@rieng.co.za); 'Elizabeth Thobejane (HQ)'
> > **Subject:** RE: Meeting on Trade and Occupation - Water Harvesting and Conservation
> >
> > Meeting is at 2.30 pm.
> > Apologies for omission of the time in earlier e-mail.
> >
> > Regards,
> > Jonathan
> >
> > **Jonathan Denison**

Umhlaba Consulting Group
Development Strategy and Support
Cell: 27 (0)82 5776481
Ph: 27 (0)43 722 1246
Fx: 27 (0)86 515 8941
Em: jdenison@umhlabacg.co.za

-----Original Message-----
From: Jonathan Denison [mailto:jdenison@umhlabacg.co.za]
Sent: 23 May 2008 08:36 AM
To: 'Andrews@wrc.org.za'; 'JeanetteSp@nda.agric.za'; 'Herman'; Chris Stimie (dir@rieng.co.za); 'Elizabeth Thobejane (HQ)'
Cc: 'Gerhard Backeberg'; 'l.wotshela@umhlabacg.co.za'; 'shaafig.fredericks@labour.gov.za'; 'Heidi Smulders'; 'erna@gracenet.co.za'
Subject: Meeting on Trade and Occupation - Water Harvesting and Conservation

Dear Elizabeth, Andrew, Herman, Jeanette and Chris,

After a few rounds of e-mails and phone calls this week, there is only one possible date for the meeting in the next 3 weeks where everyone can attend.

DATE: Monday 26 May 2008

VENUE: Elizabeth Thobejane's Office, Department of Labour, Corner Schoeman / Paul Kruger, 215 Schoeman Street, 3rd Floor Laboria House, Pretoria.

ATTENDANCE:

Name	Organisation	Confirmed
Elizabeth Thobejane	Dept of Labour	YES
Dr Andrew Sanewe	WRC	YES
Ms Jeanette Sprinkhuizen	National Dept of Agric	YES
Mr H van Deventer	Agri-Seta	YES
Mr Jonathan Denison	Umhlaba Group	YES
Mr Chris Stimie	RIENG	YES

DRAFT AGENDA:

1. Introductions
2. Overview of separate WRC Learning Packages requiring accreditation - (5 minutes each from – J Denison and Chris Stimie)
3. Rationale for accreditation within the trade and occupation framework – revision of workshop outcomes (10 minutes)
4. Discussion on process leading to formation of Community of Expert Practice
5. Tentative dates for 2-day workshop with Community of Experts
6. Closure

There is some urgency to establish the Community Experts and proceed with defining the Curriculum Framework for our WRC assignment that is underway. We appreciate your allocation of time towards achieving that goal.

Best regards,
Jonathan

Jonathan Denison
Umhlaba Consulting Group
Development Strategy and Support
Cell: 27 (0)82 5776481
Ph: 27 (0)43 722 1246
Fx: 27 (0)86 515 8941
Em: jdenison@umhlabacg.co.za

-----Original Message-----
From: Jonathan Denison [mailto:jdenison@umhlabacg.co.za]
Sent: 19 May 2008 04:26 PM
To: 'shaafig.fredericks@labour.gov.za'; 'Andrews@wrc.org.za'; 'JeanetteSp@nda.agric.za'; 'Herman'
Cc: 'Gerhard Backeberg'; 'l.wotshela@umhlabacg.co.za'; 'Heidi Smulders'; 'erna@gracenet.co.za'
Subject: Trade and Occupation - Water Harvesting and Conservation

Dear Mr Fredricks and colleagues,

Further to Mr Herman van Deventer's recent phone discussion with Mr Fredericks of the Dept of Labour, we are writing to formally request a meeting between ourselves (the Umhlaba Group), the

Water Research Commission (WRC), the Department of Labour and the National Department of Agriculture.

BACKGROUND
We are 6 months into a 4-year assignment to compile a comprehensive learning package for Water Harvesting and Conservation, targeting NQF levels 5/6 (10 level system). We have explored a number of accreditation options through a series of research reports and workshops, including one session last week where Mr van Deventer kindly presented in detail on the Trade and Occupation option. This and previous sessions have been attended by a range of researchers and senior academics from three universities as well as the Dept of Agriculture.

There is now consensus within the broader consultative forum, that for the purposes of this assignment we need to work with the DoL (and DoA) to develop the curriculum framework for water harvesting and conservation. This would dovetail with a number of existing occupations that have been developed already.

A formal commencement of the process seems advisable to create the best chance of future accreditation of the completed work.

PROPOSED AGENDA
The draft AGENDA might include:

We anticipate the meeting will need 1 ½ hours if chaired tightly.

POSSIBLE DATES
Given phone discussions with some people below, overlapping times seem improbable this week, so we propose a meeting for next week. We request that proposed participants fill in their availability in the table below, and return to me by e-mail by end of Tuesday 20th May, if at all possible.

Name	Organisation	Tuesday 20th		Thursday 22nd		Friday 23rd	
		am	pm	am	pm	am	pm
Mr Shaafiq Fredericks	Dept of Labour						
Dr Andrew Sanewe	WRC						
Ms Jeanette Sprinkhuizen	National Dept of Agric						
Mr H van Deventer	Agri-Seta						
Mr Jonathan Denison	Umhlaba Group	yes	yes	yes	yes	yes	yes

We appreciate your allocation of time and look forward to meeting you to take this work forward.

Best regards,

Jonathan Denison
Umhlaba Consulting Group
Development Strategy and Support
Cell: 27 (0)82 5776481
Ph: 27 (0)43 722 1246
Fx: 27 (0)86 515 8941
Em: jdenison@umhlabacg.co.za

Proposed Accreditation Reference Group to establish the Community of Experts For the Trade and Occupation in Water Harvesting and Conservation

Institution / Sector	**Proposed Ref Group members**
Dept of Agriculture	Jeanette Sprinkhuizen, George Mathe, Mary Jean Gabriel
Dept of Labour	Elizabeth Thobejane Shaafig Fredericks Tsholofelo Mokotedi
AgriSETA	Johan Engelbrecht Machiel van Niekerk Herman van Deventer
Agricultural Research Council	Dr Hendrik Smith
Water Research Commission	Dr Andrew Sanewe
Technical Experts - water harvesting and conservation engineering and design	Stephan Small Dr JJ Botha Marna de Lange Jonathan Denison
Technical Experts – water harvesting and conservation agricultural production	Mr W van Wyk 082 7889136 Prof Leon van Rensburg
Technical Experts – rural and agricultural development facilitation	Dr Joe Stevens Jan Potgieter 011 3551265 / 012 9931010 Erna Kruger Zanele Simane 083 4692564

NOTE: The above people have not all been informed of their proposal onto the Reference Group, although it is likely that would be keen to support the process. Their availability for a workshop on 17 June 08 also needs to be confirmed.

Compiled by Jonathan Denison, based on outcomes of the minutes of the meeting of 26 May 08 at the Department of Labour, Pretoria.

Appendix 3

DRAFT Piloting Research Instruments

Evaluation of the Water Harvesting and Conservation module

Please complete the questions (remember that no-one will know who filled this in):

1. What did you like most about this module?

_____

_____

_____

2. What did you **not** like most about this module?

_____

_____

_____

3. Were there any parts of this module that you found most useful or most interesting? Why?

part of module	reason why I found it useful/interesting

4. If you could change three things about classes, what would they be?

what I would change	why I would change it

Facilitation (teaching)

5. Circle **five** words that you think describe the facilitator who taught this module.

boring good at explaining difficult to understand

lively dull easy to talk to intimidating

well prepared willing to listen difficult to talk to

interested in learners knowledgeable okay unprepared

sensitive

understands the lives of ordinary people

out of touch with the lives of ordinary people

satisfactory bored with learners interesting

Handouts

7. Tick the box next to the sentence you agree with most.

	We did not go over the course materials at home/work again
	We went over some of the course materials again, especially those to do with the assignments
	We went over all of the course materials again

8. Tick the box next to the sentence you agree with most.

	We found the course materials very easy to understand.
	We could understand the course materials, but it was not very easy.
	We found it hard to understand the course materials.
	We could not understand the course materials.

9. Tick the box next to the sentence you agree with most.

	We found the course materials very useful.
	There was quite a lot of useful information in the course materials.
	There was not very much useful information in the course materials.
	We did not find the course materials useful.

10. Is there anything else you would like to say about the course materials?

_____

_____

_____

Class activities

11. Tick the box next to the sentence you agree with most.

	We could manage to do most of the activities in the time we were given.
	We could not manage to do most of the activities in the time we were given.

12. Tick the box next to the sentence you agree with most.

	We found most of the activities very easy to do.
	We found most of the activities quite hard to do.
	We could not manage to do most of the activities.

13. Tick the box next to the sentence you agree with most.

	We found most of the activities boring.
	We found most of the activities okay.
	We found most of the activities interesting.

14. Tick the box next to the sentence you agree with most.

	We learned a lot from the activities.
	We did not learn a lot, but we did learn something.
	We learned very little from the activities.

Assessment

15. Tick the box you agree with:

Do you think the facilitator was fair in the things she said about your work?	Yes	No
If you said no, explain why you think this:		
Do you think the facilitator was fair in the marks she gave you?	Yes	No
If you said no, explain why you think this:		

General

16. Is there anything else you would like to say about the course?

_____

_____

_____

_____

_____

CERTIFICATE IN EDUCATION (PARTICIPATORY DEVELOPMENT)

Name of module: Water Harvesting and Conservation

1. What were the most important things that you learnt on the module?

_____
_____
_____
_____
_____

2. Why were these things important to you?

_____
_____
_____
_____
_____

3. What did you like about the module? Why

_____
_____
_____
_____
_____

4. What aspects of the module do you think we should change? Why?

_____
_____
_____
_____
_____

5. In what ways, if any, have you been able to apply what you have learnt from the module in other areas of your life?

_____

_____

_____

_____

_____

6. What has the module taught you about the work that you do?

_____

_____

_____

_____

_____

7. Please rate the following aspects of the course from 1 to 6 with 6 as Excellent and 1 as Poor. Circle the number that you choose.

Course materials	1	2	3	4	5	6
Facilitation	1	2	3	4	5	6
Assessment	1	2	3	4	5	6
Overall	1	2	3	4	5	6

Any other comments:

_____

_____

_____

_____

Appendix 4

Weekly Feedback from the Pilot Course Facilitator – Week 1 to Week 18

Water Harvesting and Conservation

Technical Manual – course pilot UKZN Jan-May 2010

Facilitator evaluation of Session 1 [Lessons 1 and 2]

Introduction

Students

The course kicked off to a good start this week Thursday 21 January with 13 confirmed students and two more to join next week. There are six women and nine men.

WE have a great bunch of students who participated enthusiastically in the first session. The other CEPD specialisation, Leadership and Management, is being equally subsidised by another agency which happily ensures that students have chosen WHC because they really want to do it and not because their fees will be subsidised.

The group consists mostly of younger adults but is balanced by a handful of more mature students. While a commitment to community education and development is understandably common among this group, reasons for selecting the WHC specialisation were varied. Some of the younger ones expressed passion for the environment and concern with conserving natural resources. Some are already involved with community-based organisations that either focus on or include food security in their focus. One or two of the younger ones recently completed a matric which included Agricultural Science and enjoy nature and food gardening. We have one mature student who said he chose this specialisation simply because he likes to explore new things and wants a challenge. We also have a local politician who said he wants to "learn something practical for a change".

Prac site

The prac site has been selected. It is roughly 2 ha piece of land belonging to Mr Sibusiso Hlela, a recent mature student graduate of the Certificate Programme, now registered for a degree at UKZN. The site, situated at KwaMnyandu, on tribal land some 23km from campus, also forms part of the land used by the Madlula Vegetable Garden Project. The site was selected because of its suitability in terms of accessibility to students, size, slope, aspect and because of the CAE's commitment to supporting communities of practice within its student body - Mr Hlela is a past student of the Programme; he is an active member of a community gardening project committed to developing the scope of the project as well as the capacity of members to use the land sustainably and for the broader benefit of the immediate community. Members of Madlula will contribute their own resources to the practicals conducted on the site and will participate in some activities and learn from the students.

In addition, these students will continue in the second semester with two service-learning modules which require them to actively work with existing projects as part of a learning placement. It can be safely assumed that a number of these students will extend their work on the present site with the Madlula Project until the end of 2010.

Session 1 Evaluation

Lesson 1

Activity 1: Groupwork discussion – water harvesting and conservation

This activity took longer than the time allocated in the manual as students read slowly and took a while to come to understand what they were reading. These students are relatively new to WHC concepts and wanted more time to discuss and clarify both terms.

Activity 2: A drop in the bucket

Activity 2 took more than the 20 minutes allocated. Even though I allowed for 30 minutes, the activity went slightly over 40 minutes. I put this down to the fact that the activity raises concepts such as volume, proportion, percentages, calibration which this group of students (and nearly all students I have encountered in ten years of teaching at this level) struggled to understand without some discussion, clarification and practice. Students in agricultural colleges may have been through placement procedures that select only students with adequate mathematics and science competencies.

I want to suggest that in the guidelines it is made clearer that the activity comprises three parts:

1. Student discussion and experimentation
2. Facilitator demonstration
3. Plenary discussion.

Activity: Reading and discussing the Phiri Maseko story

Again, the activity took a long time – over 30 minutes – as students read slowly and tried to make notes of principles being applied. The discussion could have gone on for much longer, but I had to cut it short, knowing that we will explore these principles practically as the module progresses.

Activity: Brainstorm reasons for global water crisis

Ran out of time before lunch so decided to skip doing this activity formally. Conversations around the issue arose frequently during the session however, so I would consider the activity partially, informally done. I asked students to read more at home and think about the issues, possibly discuss them with others.

Lesson 2

Activity 3: Mapwork – Rainfall

This activity took longer than 20 minutes because of the students' lack of familiarity with maps and the concepts of 'mean annual precipitation', 'seasonality', etc. Also, the maps I

obtained (similar to the ones in the manual) do not indicate cities and towns so it took time to help students establish where on the map familiar landmarks were. The maps (figs 2.1 and 2.2) are not in colour and therefore cannot be used for the activity as is.

Activity 4: Rainfall research

Set as assignment 1. Students felt that it would be very challenging for them to find local people who would be able to provide anywhere near accurate annual rainfall figures for their areas. I urged them to try as best they could and suggested they speak to older people who may provide an interesting angle on changes in weather patterns over the years.

Activity 5: Mapwork- Water use in my WMA

No time to do this activity in class. Note that the relevant maps are not legible in the current draft of the manual.

Activity 6: Water scarcity

This turned out to be a pretty straightforward activity which students were able to do without much of a challenge. Useful nonetheless to get them thinking about and talking about the impact of water scarcity on resource-poor households and what measures might be taken to begin to address this.

Snap evaluation of Session 1: Lessons 1 and 2

At the end of each session a snap formative evaluation is conducted verbally and in plenary. Simply, students are asked to brainstorm:

- What they liked/found useful and why
- What they didn't like/found not useful and why
- What they would change about the session and how.

Students liked:

- the Phiri Maseko story: "opened my eyes about water harvesting"

  "learned how important one's mindset is when it comes to survival"

  " the illustrations really helped to create a picture of what was being described".
- The 'drop in the bucket' activity because "it really taught me something new about our world".
- The language level: accessible and easy to understand
- Manual is well set out with easy-to-understand diagrams

- Atmosphere in the class was great: "cooperative and friendly – thanks to the facilitator"
- "The 'light and lively'[1] was great – it woke us up, kept us focussed and was fun.
- The experiments were appreciated – "helps to demonstrate reality and help us with understanding".

Students didn't like:

- the mapwork which they found tedious and involved too much fine detail and figures.
- the mathematics involved in Activity 2: A drop in the bucket and found this aspect complicated the activity and confused them.

Students would change:

- "the mathematics the facilitator used when doing the 'drop in the bucket' activity. It just confused us".

  (I agree strongly – this 'bright idea' of mine simply did not work well and indeed confused some of the students who otherwise may have found the activity relatively simple and powerful.

Moving forward

Session 2

Session 2 will be conducted in tandem with a field visit to Potshini in Ukahlamba (Drakensberg) region where students will be guided around the excellent example of water harvesting and conservation practice there. A number of the methods and techniques which they will practice in the weeks to come will be explained and demonstrated. Time will also be allocated for their participation in practical activities from Lessons 4 and 5.

[1] The facilitator uses short energisers and fun activities to maintain energy levels and keep group focussed.

Water Harvesting and Conservation

Technical Manual – course pilot UKZN Jan-May 2010

Facilitator evaluation of Session 2 [Lessons 3 and 4]

Introduction

Students

This week we had the full complement of 15 enrolled students plus an additional student – an ex-certificate (CEPD) graduate who will register for Water Harvesting for non-degree purposes. WE now have a total of 16 students.

Prac site/field visits

Session 2 was planned to take place in tandem with a field visit to Potshini in Ukahlamba (Drakensberg) region where students were to be guided around the excellent example of water harvesting and conservation practice there. Unfortunately, this visit was cancelled just a day before due to heavy rainfalls in the area that rendered local dirt roads impassable. This field visit has now been postponed for the time being. Session 2 was thus hastily planned and prepared, but went off pretty well considering.

Session 3 will be conducted on site at Kwamnyandu (see lesson plans 1-3) attached.

Session 2 Evaluation

Lesson 3

Activity: Introduction to Chapters 3 and 4 and reflection on Chapters 1 & 2

I find it crucial to begin each new session with a brief overview of the material to be covered. We also look at the session plan for the day which is handed to each student on arrival. Also important in this first activity is to provide students an opportunity to ask questions about the assignment/homework from the previous week.

In this activity students said that it was difficult to find local people who knew anything about local rainfall data other than it rains a lot in the summer and not much in the winter. They said that the people they spoke to struggled to think in terms of rainfall units in millimetres and tended to want to guess volume. Most students said that the average local person either had no idea how to start estimating rainfall or if they did, were hopelessly off in their estimations. Once assignments (due next week) are marked, I will have more detailed feedback on the value of the assignment task.

Activity 7: Making a terrarium

I thought it would be interesting for students to make their own terrariums in pairs as this would not only demonstrate graphically the water cycle but would also provide an opportunity for students to sustain interest in a project with a partner until the end of the course. This project they will be expected to report on for inclusion in a summative portfolio to be handed in at the end of the module. Unfortunately, it proved inconvenient for students to carry their terrariums back home with them on public transport and so they have been stored in my office. The plan was to have students record their observations every week. I selected seeds that would take at least a week to germinate. However, it seems that some of the seeds took barely two to three days to germinate so there will have been much activity in the bottles by the time the students return to observe after one week.

An issue that I had not anticipated was one of the women who said that she was not permitted by custom to handle soil and seeds and participate in planting during her menstrual period. She therefore spent most of this activity observing while her partner carried on with the activity. Otherwise she participated actively in all discussions.

The students really enjoyed making a terrarium together. It worked well to make the terrarium with them step by step in class.

In terms of the instructions in the manual, I found that I did not understand the inclusion of the dish and it was not clear where and how the dish should be placed and I felt that instructions could have had more detail and tips. I adapted some instructions I found on the internet which did not include a dish so I left that bit out. The internet instructions also had some helpful tips which I included for the students.

It took approximately 80 minutes for me to do the activity with the class working in pairs.

Adapted instructions:

- Draw a line around the bottle about 16 cms up. I use a neat little trick to make a nice straight line. I rest the marker on the top of an upside down cup then I rotate the 2 liter bottle. It makes a nice straight line.
- Cut the bottle along the line with a pair of scissors. You may need to start a small hole in the bottle before you can cut it with the scissors.
- Place a handful of stones in the bottom half of the bottle. About 5cms deep should be good.
- Place your other materials in the bottle. Fill it to about two fingers from the top.
- Now Plant your seeds! You should plant 6 to 10 seeds and later as they grow you can pluck out some of the weaker ones and leave the 2 or 3 best ones.
- Don't forget to water your terrarium before placing the top on. The soil should be moist but not soaked.
- Place the top on. I recommend you squeeze the top onto the bottom so the top is on the outside.

- If you have trouble fitting the two pieces together you can cut a slit about halfway down the bottom half of the bottle. This will help it close up a bit and make it easier to fit the top over it.
- There are two important factors you have to consider when it comes to your terrarium: the amount of sunlight it gets and the amount of water that is inside.
- Once the plants have sprouted you should make sure it gets sunlight but do not leave it in direct sunlight for the entire day. It is a closed environment and it can get very hot inside.
- Look carefully at the soil in the terrarium. It should look moist but not soaked or too dry. Beads of water should form on the top inside near edge and these will drip down the sides and continue to water the soil. If it appears to be too wet you can take the top off and leave it uncovered for a day or two.

Activity 8: Water catchments

This activity was fairly easily conducted as a group at the university, using an adjacent house-converted to offices. I felt it was useful in the sense that it provided an opportunity to begin prompting students' observations of water movement. Students asked questions of each other and those with previous experience of water catchment were able to point out things to note as we went along. I felt it was important to encourage students to observe and note in preparation for doing the activity themselves at home. This Activity 8 I then assigned as a portfolio task for the week.

Activity 9: Sponges like soil

A colleague questioned why we would want to use sponges to demonstrate something which could be more graphically represented using actual soil types. I wondered myself but due to time constraints went ahead with the sponges, which I had on hand anyway. The sponges were a success and in conjunction with a blackboard diagram of Figure 3.4 [Confined aquifer…] worked well to demonstrate the difference between the saturated and unsaturated layer and how water moves through and accumulates in the soil. Many students reported finding this discussion useful in helping them to understand the concept of groundwater.

Activity 10: Pollution

We did this activity together in class. Students were able to do this activity quite easily, but were really fascinated by the discussion on pollutants that I led and which accompanied the activity. What they found interesting was finding out the impact of seemingly rather innocuous pollutants like detergents, how sewage gets into groundwater and how conventional agricultural methods lead to widespread contamination of both surface and groundwaters. While some students were well-informed, many of the students appeared to not have given much thought to pollution in the past and so for them this discussion was a real eye-opener!

Would it be possible to include in the manual an insert, perhaps with a pic, showing and discussing the environmental effects of one kind of pollution (such as detergent)? Another suggestion would be to encourage the facilitator to find newspaper articles on the topic or set a homework task along these lines.

Activity: Field trip to wetland

This activity was planned for the Potshini field trip which did not take place. WE will need to reschedule this activity.

Lesson 4

Activity: Examine soils samples with a magnifying glass

A slip in my own planning process provided a useful idea for conducting the activities on soil. I had forgotten that I wanted students to also (along with 5/6 other soil samples) examine the soil to be used for the terrarium because it was the most fertile and therefore the most microscopically active, and so, once I realised this (while making the terrarium) I hastily hauled out the magnifying glasses to enable students to examine the soil before we planted it.

If doing this activity, making the terrarium and 'making soil sausages' activity, it makes sense to examine the soils during the other activities. In other words, have the magnifying glasses handy and examine the soils used both in the terrarium and the soil sausage activities while conducting those activities as opposed to having it as a discrete activity. By accident this is what we landed up doing during this session and it seemed to work well and provide a more holistic approach to soil examination.

Activity 11: What kind of soil? [making soil sausages]

This activity went off well and students in small groups participated actively and with interest (enlivened by frequent scatalogical jokes from the men!) It worked well to integrate soil examination with a magnifying glass into this activity. AS the supply of different soil types was limited at the university grounds, I brought six different soil samples to class and we did the activity between the classroom and an adjacent outside space.

If this activity has to be conducted indoors, care needs to be taken to arrange for appropriate surfaces on which to work or for desks and floors to be protected (possibly with newspapers) from the ensuing mud.

Activity 12: Textual triangle

I did not even attempt this activity with the students. From my own experience of students at this level and knowledge of the general mathematical competence of students who come from disadvantaged educational backgrounds, I would say that most students, if they were courageous enough to attempt it, would find it a profoundly disempowering experience.

I would consider leaving it out of the manual.

Activity: Watch Umhlaba dvd on water harvesting

Students enjoyed this activity. I frequently paused the action to point out things of particular interest and to highlight processes and structures that will be covered in the course, allowing for questions and discussions. The dvd turned out to be a very useful, graphic teaching tool and I would recommend its inclusion in the lesson structure. It provides a useful alternative method of teaching and students love the TV! Of special interest to this group was the connection between trench beds and Baba Robert Mazibuko, who lived nearby in the Edendale Valley, where most of these students live.

Activity: unanswered questions

Another facilitation, pedagogical tool I find very useful is the (sometimes brief) activity that serves two purposes – it provides an opportunity for students to clarify issues/information that is not clear to them and it ensures that students feel their learning needs are being recognised. If students are sometimes reticent, its important to encourage them to seek clarity on issues and answers to questions. If done regularly and sensitively, this part of the session can be a powerful learning tool for students, really helping bringing a class up to speed. It's the worth the investment in time and works against the situation where some students are left feeling like they've missed the boat along the line.

Snap evaluation of Session 1: Lessons 1 and 2

At the end of each session a snap formative evaluation is conducted verbally and in plenary. Simply, students are asked to brainstorm:

- What they liked/found useful and why
- What they didn't like/found not useful and why
- What they would change about the session and how.

The activity basically works as a brainstorm and discussion is limited. After each point is made the facilitator takes a straw vote to rapidly gauge whether a majority or minority support the statement. If the statement made appears to be a minority sentiment, I record it as such, otherwise it may be taken by the reader as a comment with majority support

[Unfortunately today's snap evaluation was somewhat limited because of the time taken to make logistical arrangement for the first site visit next week)

Students liked:

- The soil sausage making activity which they said:

"helped me to understand how soil and water work at my place"

"I learnt a lot about different soils".

- Making the terrarium because it "was fun" and "helped us to understand the cycle of soil and water".

- The discussion around figures 3.3 and 3.4 (groundwater) students found illuminating. AS one student put it:

  "it was very useful to understand how water moves through the soil, how it is stored in the soil and how and where it can be accessed".

Students didn't like:

One student said that the soil sausage activity ruined her recent manicure!

Students would change:

Some students suggested I prepare blank snap evaluation handouts that I hand out and the beginning of the class and collect at the end.

(I will try this to see what we get in the way of evaluation, but, as I pointed out to them, handouts are more work for them as well as more work for me. Doing it as brainstorm in plenary at the end of a session is quick and effective).

Assessment

I have begun to develop an assessment schedule for this module (which I include below). I have chosen to develop the schedule as we go along rather than carving it in stone up front because it allows for greater freedom to select appropriate activities for assessment as we go along. As a pilot, I feel it is appropriate to construct it in this way.

The plan is to have three to four written assignments and one or two small group practical activities assessed. This will comprise 60% of the total module mark. The portfolio (40% of the total mark)will consist of a submission of each of the 7 Chapter Review questions (some of which I will mark and some of which will be peer assessed and reviewed by me), as well as reports on activities (such as the terrarium), homework activities and structured reflections and evaluations of the module.

An attempt will be made to trial all three of the suggested assessment rubrics.

Draft Assessment schedule

Assignments/practical activities (60% of total mark)

Topic	Due date	% of total mark
Assignment 1 Activity 4; p 28	4 February	

Portfolio (40% of total mark)

Topic	Due date	% of total mark
Review questions: Chapter 1	4 February	
Report on Activity 8: Water Catchments [p 50]	4 February	
Review questions: Chapter 2	4 February	
Review questions: Chapter 3	11 February	
Review questions: Chapter 4	18 February	

Moving forward

Session 3

Session 3 will be conducted on the KwaMnyandu site which will be utilised for the first time.

Lesson 4 will include a field trip to visit a viable local farming system.

Water Harvesting and Conservation

Technical Manual – course pilot UKZN Jan-May 2010

Facilitator evaluation of Session 3 [Lessons 4 and 5]

Introduction

Students

This week 14 of the 16 students made it out to the prac site, KwaMnyandu.

Prac site/field visits

Session 3 was the first session to be held at KwaMnyandu. Getting everybody to the site, despite careful planning, took longer than expected and we began an hour late. However, it is a great site that provides ample opportunity for exploration of the concepts under study and for carrying out the activities planned for the module. We have now clearly established the route from the city and have familiarised ourselves with the site. As expected, the time invested in prior scoping of the site, and planning where and how activities would be conducted proved invaluable and enabled the group to set up and begin activities without delay once we got there.

An omission was provision of ample alternative space for gathering and working in the event of rainy weather. After lunch, the rain set in and it was no longer possible to continue with the outdoor activities. The current buildings are too small to be suitable for the group to gather and work and the work we did in the afternoon was carried out in very cramped conditions. As a result we left the site an hour early, thus, regrettably losing two hours of the day.

An adequately sized tent has been arranged for us to use should rain threaten to stop play in the future and we are looking into the feasibility of sorting some affordable seating arrangement.

Session 3 Evaluation

Lesson 4

Activity 13: Soil profile

This activity was undertaken with great enthusiasm by students who worked in four groups of 3 to 4 members. We had one spade per group with the two picks being shared. While it is obviously important for students to take a rest after digging, I encouraged those who were resting to be sitting with their manuals, going over the section on soil horizons and soil profiles to inform their work. I felt it was important to first get students to own the problem before launching into the task so we spent some time exploring the reasons why one would want to dig a soil profile pit in the first place. This worked well and students selected 4 different sites for their pits with the aim of establishing where on the site would be most suitable for planting a vegetable garden.

As the slope is fairly steep, albeit previously excavated in places, students chose to stagger their pits from the highest to the lowest points of the site. This worked well as students were able to see quite clearly how the layer of topsoil deepened towards the bottom of the site. It was thus clear that the lower section was most suitable and the upper sections least suitable for planting. Exploring why the topsoil was deepest lower down of course led the discussion usefully to the issue of soil erosion, runoff, etc, and on to practical ways of reducing the problem. By this time they are already looking forward to constructing bunds and digging swales.

Because it was decided to extend the activity as a formative assessment exercise, we took two and a half hours to complete instead of the brief one-hour introduction to soil profiles that had been planned.

Activity 14: Sponge experiment

This is a pretty simple, short, but nevertheless effective activity in getting the point about saturation, capacity, wilting point, etc across.

Activity 15: Zone of compaction

Although a relatively simple exercise, students really liked it. The majority of them said they felt they learnt something important about soil structure. The discussions were also useful in leading the group towards thinking about what kinds of soil are conducive for planting and how certain soil structures can lead to erosion. It helped to have (compacted) cattle paths nearby that had clearly morphed into gulley erosion over time.

Activity : Examine surroundings for soil erosion

This activity was somewhat hampered by the onset of rain. However, students managed to spend about 15 minutes exploring the site and surrounds. The site is an ideal one for observation of soil erosion as it is on a relatively steep NW-facing slope with steeper slopes above that is frequently lashed by rainstorms. AS a result there are examples of sheet and gulley erosion that can be observed and discussed.

The reflections on the observations provided excellent opportunities to link the topic to what we have explored previously in the course. For example:

- the water harvesting and conservation techniques practised by Phiri Maseko
- the eight principles of water harvesting
- water catchments
- groundwater, as well as
- the exploration of soil horizons and soil structure from the morning activities.

It was also useful to reference forward to the work we will be doing on bunds, swales, terraces, fertility pits, etc. Because of the poor educational experiences of most students from disadvantaged backgrounds, these students tend to compartmentalise their learning, making it difficult for them to see how one subject connects to another and for them to understand both the purpose and objective of what they are doing. For this reason it is

important for the facilitator to lead students towards making these links explicit so that they entrench good learning habits of continuously linking what they are currently focussing on backwards and forwards. In this way there is continuity and students remain clear about the purpose of what they are learning and how it fits with the other topics.

Other activities in the day's schedule

Because we lost an hour in the morning, extended the soil profile activity, and because rain prevented further work outside, no further activities were conducted and we wrapped the session at 2.30 instead of 3.00. Students were exhorted to spend homework time completing their review questions, preparing for their soil profile group presentations, as well reading ahead about ecosystems and farming systems.

Assessment

I decided to go with the facilitator guide suggestion of using the soil profile activity for formative assessment purposes so each group was assigned the assessment task as suggested and provided with the group assessment rubric offered in the facilitator guide. The students have been allocated ten minutes for each group presentation with a few minutes at the end for questions from the audience. These presentations will take place during session 4.

Moving forward

Session 4: if negotiations are successful we will be visiting a local farmer and a neighbouring wetland. WE will return from the excursion for students to make their group presentations on campus.

Should this not be possible we will continue at the KwaMnyandu site with the ecosystem, aspect and slope activities that we did not get to this week. We will also make the A-Frame and line level and conduct the related activities.

General

Mathematical/technical components

The PH-test of soil I decided was one to leave out, not because it would not be useful but because I am already beginning to feel that time is limited and that some of the more technical aspects (which most of students will not be called upon to perform in the line of work) can be omitted from the practical sessions to enable us to focus on the simpler, practical aspects of the course.

Although we did not get to the activity requiring students to work with protractors I am of the view, given their struggles with figures and math that we simply do not have the time to spend trying to remedy a lifetime of mathematical disadvantage in order for students to fully get to grips with these aspects of the course. The sections of the course that focus on mathematics and calculations concern me in terms of my ability to adequately cover these aspects of learning in the time we have.

I also have concerns about the correctness of some of the mathematical formulae in the manual, but I will discuss these concerns in more detail in the next report.

Diagrams and illustrations

I will conduct more in-depth evaluations with students to ascertain their views. Once I have this feedback I will report more thoroughly on this aspect.

Activities and materials

Activities seem realistic and relevant and are for the most part enjoyed by students. At times I feel that the materials tackle mathematical concepts and processes that would require additional remedial inputs for students to be able to grapple with them effectively.

Course developers need to strike a balance between 'challenge and competence' in writing the materials. Sentences are sometimes longer and more complicated than many students at this level are realistically capable of processing. Indeed students should be challenged to develop their capabilities but then somehow there needs to be a strategy in place for encouraging students to tackle challenges rather than to simply skip over the tricky bits.

Time

Unless students have after-hours access to the site on which they are doing the majority of their work for this course they will not be able to fulfil the time obligations for activities advocated by the course. It is certainly a challenge for this group, the vast majority of who do not have ready access to the site outside of contact time.

Water Harvesting and Conservation

Technical Manual – course pilot UKZN Jan-May 2010

Facilitator evaluation of Session 4 [Lessons 6, 7, 8, 9]

Introduction

This week, external evaluator, Jonathan Wiggly, accompanied the group to the prac site to observe proceedings.

Students

This week again 14 of the 16 students made it out to the prac site, KwaMnyandu.

Prac site/field visits

We are settling into working at the prac site now. The weather is extremely warm in the upper thirties and we have designated the shade of a large black wattle on the site as classroom/gathering place.

Session 4 Evaluation

Activity: Recap last week's session, feedback on assignments

As we started late again due to transport challenges, we skipped the recap and went straight to feedback on Assignment 1: Activity 4: Rainfall research [see section on Assessment for discussion].

Lesson 6

Activity: Examine Ecosystems and discuss

Many students reported that they enjoyed this activity and the discussions that followed. Importantly, the activity provided an opportunity to link previous learning with the current activity. A particular focus of the linking was looking at the impact of runoff, erosion and pollution on the ecosystem on-site. An important concept under discussion was 'knock-on effect' – how interference/change in one part of the ecosystem impacts on so many other parts of the system. Nonetheless I was struck by how much one could discuss and link and explore a topic such as ecosystems and how limited time is available to cover aspects of this topic in-depth.

Activity 7: Introduction to slope and aspect

While the suggestion for determining points of the compass in the manual - that one stand pointing the right hand towards the sunrise (east), the left hand towards the sunset (west), to determine that one will be facing north, with south directly behind is useful, but limited to some extent. If one is a facilitator and wishes to demonstrate how to determine aspect of a slope in the space of few hours, one may be limited if participants are not clear where the sun rises and sets.

We employed an additional technique which students found intriguing and useful , and which can be used if a group is not sure of the direction of sunrise and sunset, or if one needs to pinpoint north with greater accuracy.

Note that this technique only works if the sun is shining.

- Upon arrival at the site, one clears a small space on the ground 50-100 square cm will do.
- Place a short stick (about 15cm long) vertically in the soil.
- Place another short stick at the exact tip of the shadow of the first stick.
- Continue with other activities and return to the sticks after approximately 2 hours.
- Place a third stick at the exact tip of the shadow of the first stick (the shadow will have moved considerably over 2 hours).
- Scratch a line in the soil to connect the second and third sticks. This is the 'sunline' which is aligned east-west. The second stick gives you your westerly direction; the third stick gives you east. If you stand pointing the right hand towards the east and left hand toward the west, you will be facing north.
- For greater accuracy, if you intersect the sunline at a 90º angle that gives you your north-south line.

As time was limited, we did not work with protractors on the slope.

Activity 17 & 18: Constructing and using A-frames and line Levels

Students were divided into two groups of equal size. Group 1 worked with the Line Level and group 2 with the A-frame. I felt it would be more effective to obtain all the materials needed for this activity beforehand and have them on-hand rather than expect students to buy or borrow what they needed, so all materials were provided. However, in an effort to get students to take responsibility for their own learning, to encourage them to use the manuals constructively and to foster a sense of accomplishment, the students were simply requested to use their manuals and instructed to get on with the activity. I was continually on-hand to provide support and guidance when absolutely necessary.

On the whole students did not do too badly on their own. Notably though mistakes were commonly made in both the construction of the objects and in their implementation because of a tendency of students to not read instructions carefully enough. On a few occasions the facilitator needed to redirect them to study the instructions because of some detail they had overlooked.

Because the Line Level was relatively simpler to construct, this group finished first. I then directed them to measure the contour across a slope where we will be digging swales and making bunds. I decided to focus only on measuring contours this session. When the time comes to make swales, the question of how far apart to dig them will arise and at this time we will use the objects to measure slope and from there calculate how far apart the swales should be.

It was interesting to use the more accurate instrument – the line level – to measure the contour first. Once the second group had finished making their A-frame I then directed them to test the accuracy of the line-level by measuring the same contour with their A-frame while group 1 observed their progress.

Initially, the instruments were much on a par in terms of accuracy until one point where it was clear that one of the instruments was giving a very different reading. The upshot seemed to be that the line level group had not been vigilant enough and had made a sloppy reading on at least one leg of their journey across the slope. However, the important point made was not that one instrument was necessarily more accurate than the other but that human error can occur and it is important to double check one's measurements, whichever instrument is being used.

Activity: Observation of trench beds

This activity did not take place due to time constraints. However, there is a partially completed trench bed on site, that will provie the basis for observation and discussion next time.

Students' evaluation of the session

A majority of students reported enjoying the ecosystem activity and discussion:

- 'I learned more about the connection of living thing and non-living thing to each other'
- 'I enjoyed learning how different organisms function and rely on each other on a ecosystem network'.

Establishing aspect of a slope:

- 'I liked this activity because it's a useful way to decide where you should put your garden'.
- 'you can use this method anywhere.. its simple and cheap'

Constructing and using Line Level and A-frame:

- 'its cost nothing and easy to make'
- 'the A-frame its homemade it gave us accurate readings all the time and you can use it anywhere and its not expensive'

While some students complained that they had struggled to make the instruments on their own, it was gratifying that an equal number appreciated the opportunity to do the activity on their own, that it gave them a sense of accomplishment.

Assessment

Assignment 1 - Activity 4: Rainfall research [p28]

Local people the students interviewed tended to gauge rainfall in percentages which was very interesting. I engaged students on what they understood by gauging rainfall in this way and what they thought the interviewees meant by it. The answer was intriguing – ordinary people have little idea of the quantities of water than falls as rain. However, the reference point that many of them use is the daily weather reports on TV that display the LIKELIHOOD of rain as a percentage. People seem to interpret this expression of the likelihood of rain as an indicator of HOW MUCH rain is predicted. For them, rainfall is measured as a percentage. However, they do not understand the information they are receiving. A number of the students themselves seemed to accept and yet were unable to explain this concept of rainfall measurement. This finding certainly bears further investigation, pointing as it does to a very serious gap in knowledge not only about water and how it is measured, but also about the mathematical concept of measurement itself.

Survey respondents were also reported to have estimated mean annual rainfall in the form of setting down two extremes, eg: the average rainfall is 130mm – 1000mm, and so on.

Students generally did not reference the sources of their 'official' data. They need to be encouraged to develop this essential academic habit.

This group of students seem generally to have underdeveloped interview and reporting skills. Generally their reporting on information indicated that perhaps they had misunderstood the questions/concepts to some extent or failed to ask the questions accurately or failed to report accurately. At times it may have been a combination of all three factors.

Overall I would say that most students did not adequately grasp the concepts we covered in class. Despite spending more than the allocated time on the Activity 3 in class which included explanations from the facilitator as well as practical mapwork, students on the whole still do not understand well the concepts of 'average', how to discuss seasonality, etc.

Generally they also were poor at comparing their collected data with data from the maps with which they were provided. However, this is academic skill is a common challenge for students with Bantu education backgrounds.

Question 4: Reflections on conducting the activity, was also generally answered quite poorly. Responses tended to be very shallow and lacking in critical reflection. Students will need some encouragement and support and have to put a lot more effort into critical reflection during their service-learning modules in the second semester.

Moving forward

This week (Session 5), students will undertake a field visit to study the farming systems of two local farmers. Upon their return to class in Pietermaritzburg, they will present for assessment, their findings from the soil profile activity undertaken during Session 3.

Water Harvesting and Conservation

Technical Manual – course pilot UKZN Jan-May 2010

Facilitator evaluation of Session 5 [Lessons 6]

Introduction

This session consisted of a field visit to a local rural farmer to study the farming system (Lesson 6). On their return to campus students made group presentations of the Soil Profile activity they did on the prac site (Activity 13; Assignment 2).

Students

This week 13 of the 15 students made the field trip. The 16th student who was attending the course for non-degree purposes, has dropped out.

Prac site/field visits

The host for the morning was Baba Maphumulo, a farmer from the Mbumbulu district, between Durban and Pietermaritzburg. We were referred to this farmer through association with the University's Centre for Environment and Development (CEAD) and the Agricultural Research Council. Baba Maphumulo is a small scale farmer who works closely with neighbours, producing organic vegetables for Woolworths.

Session 5 Evaluation

Field trip

Students really enjoyed the visit to Baba Maphumulo's place. From their questions to and conversations with him[2] I was able to ascertain that:

- Students were particularly impressed by Baba's practice of organic agriculture. Numbers of students were not aware that pesticides and herbicides can be dangerous, and threaten health and environment. They were soundly persuaded by his convincing lecture on the benefits of organic.
- Students were fascinated with the concept as well as the demonstration of preparing and sowing seedbeds as a prelude to planting out seedlings.
- Students responded very well to the old man who, while praising the practice of organics and supplying Woolworths on contract, espoused good old fashioned values of community cooperation. Students seemed impressed by the way in which Baba finds this balance in today's world.
- Students obviously enjoyed learning about how to propagate and grow bananas and amadumbe – two common foodstuffs that few of them knew how to grow.

[2] These conversations were mostly in isiZulu but I subsequently met with students to clarify my understanding of the substance of these exchanges.

- They were also impressed by Baba and his neighbours' choice of cattle as ploughing method over more mechanical, but as he pointed out, more costly and environmentally challenging methods such as the tractor.
- Baba was able to show students and to explain the usefulness of an underground runoff storage tank.
- It was further useful that students were able to see water harvesting and conservation methods such as diversion ditches, swales and storage tanks in practice.

Presentations (see Assessment, below)

Students' evaluation of the session

Students liked:

- Learning so much about small-scale, rural, organic farming
- Learning about how to grow specific crops and different uses for common herbs and plants
- Learning about seedbeds
- Seeing what swales and other rainwater harvesting techniques actually do.

Students said that they enjoyed these things because they felt better able to understand the course because of what they learned and better able to share what they had learned with others in the future.

Students said that while presentations are not exactly enjoyable exercises they appreciate being given the practice and to gain experience.

Students didn't like:

- Having to make presentations in the afternoon after the morning field trip

Students suggested:

Next time if both a field trip and presentation are made on the same day, to reverse the order and do the trip after the presentations.

Assessment

Assignment 2 - Activity 13

For this assessment I used Assessment Rubric 3: Group Presentation. The criteria were useful but I felt that it left some gaps. At the conclusion of the course I will write a more comprehensive appraisal of the rubrics. For now, I found the most obvious omission was space for comments. AS I hand these rubrics to the students once completed, I like to be

able to provide them with detailed feedback. What I did with this rubric was to create three spaces below the table for comments, viz:

1. What the group did well and why.
2. What the group did poorly and why.
3. What the group and individuals can do to do improve their presentations skills.

On the whole the presentations went off fairly well, although there was a marked gap between the one group which scored 72% overall and another that only managed 47%.

The group that did so badly simply had not practiced sufficiently together nor rehearsed their own presentations enough. As a result their presentation came across as shoddy, hesitant, lacking in confidence. By contrast the group that did really well had rehearsed a slick performance and they came across as confident and knowing what they wanted to say and how they wanted to get their points across. Groups did well in terms of sharing responsibilities.

Standard areas requiring remedy are:

- A tendency to talk to the poster behind the presenters rather than holding conact with audience;
- Some members of the group not pulling their weight and thus letting the side down;
- Hesitancy, nervousness, fidgeting;
- Reading speeches as opposed to speaking from experience;
- Lack of rehearsal as a group.

All groups prepared very poor posters that one couldn't read or see clearly.

Moving forward

Next week (Session 6), students will be digging trench beds in groups at the prac site KwamNyandu.

Water Harvesting and Conservation

Technical Manual – course pilot UKZN Jan-May 2010

Facilitator evaluation of Session 6 [Lessons 9 & 10]

Students

This week 13 of the 15 students attended the session at KwaMnyandu, the prac site.

Session 5 Evaluation

After spending the first half and hour providing feedback on the presentations students made last session and discussing their reflections on the field visit last week, the remainder of the day was devoted to Activity 19: Trench Beds.

Assessment

As suggested, Activity 19 was conducted in the form of a group assignment task (Assignment 3). Students formed their own groups of 4 and 5 members each. I amended the notes from the facilitator guide into a handout/instruction sheet. My approach once again, was not to spend much time on explanations, but to provide a brief introduction and allow students to work on the project closely referring to the manual as a guideline. I was on hand to facilitate this process throughout and provide input and guidance only where requested or if I judged something was seriously going wrong (which is rare). In this way students get the opportunity to take better responsibility for their own learning and get to actually use the manual in groups, on their own.

Reflections on the process

Generally, students tended to spend too little time on planning. This may be something which a facilitator needs to emphasise in an introduction. Although I encouraged more careful planning, the groups began digging their trenches with great enthusiasm without much planning. As a result, they encountered problems down the line:

- They didn't effectively plan how to manage the piles of different soil layers leading to wastage and mixing of soil and also confusion when it came to filling in the trench.
- They didn't effectively allocate the sharing of tasks which led to group members standing around watching others dig when they ought to have been collecting organic material and mulch for later. As a result it became frantic when they realised that they needed great piles of organic material to chuck into their trenches. Then again, once the bed was almost complete, there was another mad rush to collect mulch.
- They neglected to plan for digging a drainage furrow for the bed and were dismayed to discover that once they reported the bed complete, I asked them where the furrows were.

I suspected that planning would be a weakness with this group and this was confirmed during and after the activity. While its important for the facilitator to emphasise the

importance of careful planning its equally important to allow the students to make the mistake of not planning because this mistake is painful (it leads to frustration and regret) and students are more likely to learn the lesson than if the planning is enforced early in the activity by the facilitator.

Another important point of reflection during the debriefing of the activity is the extent to which the fierce competition between the groups led to a failure to plan effectively and to consider process during the activity – the students were so caught up in trying to outdo the other groups (and other members of their own group) that they dropped a few important balls. This is an important reflection in terms of groupwork and how in situations like these, cooperation between and within groups can lead to more effective completion of task.

Another interesting observation I made was that two of the three groups were so obsessed with 'doing it by the book' that it slowed them down, hampered their progress and prevented them from improvising. For example, groups waited around for the string and tape measure rather than improvise with spade measurement and lines in the sand, while one group's digging was consistently hampered by the string they had erected to demarcate the bed. Despite great frustration with the string constantly in their way, they would not remove it. Its important for a facilitator to encourage students to critically evaluate issues like this:

- what would have been the consequences of removing the string?
- Is there another way you could have measured and demarcated your bed?

On the positive side groups also came up with innovative ways of saving time, gathering manure from nearby homesteads, sourcing additional tools, finding a creative way to bring water to the site, etc.

Students evaluation of the session

Students liked:

- Working together in teams and being given responsibility for working out tasks and allocating different responsibilities for each group member.
- Working outdoors and learning something useful about soil improvement and making beds.
- Learning about trench beds and learning practically how to make them.
- Learning something useful that they may be able to teach people in the future.

Students didn't like:

- Students complained about not having sufficient resources to carry out the task – they referred mainly to the lack of suitable tools to cut the mulch they needed.

Suggestions for the future:

- Predictably, students requested sickles for cutting mulch.

Moving forward

Next week (Session 7), students will be measuring and digging swales in groups at the prac site KwamNyandu.

Other issues

Site visits

The issue of site visits has been a consistent challenge in this pilot. While site visits are extremely valuable in terms of providing students with first hand exposure to actual examples of the methods and application of the techniques they are learning about, I have had to weigh this against the importance of students spending time physically putting these methods into practice and learning by doing. Site visits in the context of this pilot are both time-consuming and expensive and the prac site is relative-speaking far from the campus. In other words there is simply not enough time in the day to do a site visit and also do work at the prac site. This has meant the omission of many of the recommended site visits.

Future offerings of the course at other institutions should take this into consideration. The sites for visits, the classroom and the prac site should be as far as possible in close proximity if all these aspects of the course are to be effectively included in the offering.

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Facilitator evaluation of Session 7 [Lessons 11 & 13]

Students

This week 13 of the 15 students attended the session at KwaMnyandu, the prac site. One student has withdrawn because of irreconcilable work clashes.

Session 7 Evaluation

The first hour was spent clarifying elements of the assessment schedule and submission dates and discussing assignments, giving feedback, etc. The session went well, however, as expected many of the students have left their portfolio activities to the last minute which means that they in for two weeks of intense work to complete in time for submission on 18th March.

Activity 20: Constructing stone bunds

While I had originally planned for students to spend some time measuring a contour and then constructing a small stone bund, we were delayed today by rainy weather. As a result we omitted the actual construction of the stone bund. The immediate area in any case is particularly devoid of rocks and it would have entailed rather a lot of long-distance lugging in order to bring rocks to the site.

This proved to be lucky from a pedagogical view in a way because we were able to raise and discuss the important issue of appropriateness of the various water harvesting methods. I noted last week that students had at times hampered their own work by religiously adhering to guidelines in the manual (such as using string to demarcate bed lines). So this was a good opportunity to discuss the importance of understanding the purpose of the various methods and the importance of selecting methods that are appropriate to the context. Naturally students were pleased that they didn't have to lug tons of rock over long distances in order to build a stone bund but the point about context and method was easy to make.

Students spent some time marking a contour using both line level and A-frame – using the one to check the accuracy of the other. Once that was done, we discussed how a stone bund would be built and when this choice of method would be most appropriate.

Assessment

I presented Activity 21 – Swales, as assignment four, and students completed the activity in much the same way as they did Activity 19 – Trench beds. I am emphasising the importance of groupwork and understanding the dynamics of planning and implementation of group tasks. This is because these students are studying not only to be able to execute water harvesting and conservation methods but also be able to facilitate knowledge and understanding of these methods with others. It's therefore important that they are encouraged to reflect often on how groups work and the complex issues that effect the efficiency of groups.

Reflections on the process

I noticed that students were becoming frustrated as they checked their contour measurements because the line level gave slightly different readings to the A-frame and even checking line level readings with previous line level readings sometimes yielded a slightly different result. While I think its important to encourage students to verify readings in this way its also important to point out that these instruments are not particularly accurate and that it doesn't matter hugely as long as rough measurements are done with due diligence and checked. In the long run, a reading from either line level or A-frame (correctly calibrated) will provide a contour line accurate enough for our purposes. Particularly in the case of a swale, the trench can be altered over time as required with minor excavations to achieve the required results.

Once again it was clear that students spent too little time on planning their activity. This was especially true of the initial part of the activity which involved measuring their contour. Even though we recapped issues such as the importance of keeping the poles of the line level perpendicular to the ground, students omitted to allocate anyone to act as observer to keep this on track. Ideally one would have two members of the group whose task it is to ensure that the pole holders keep their poles as upright as possible. However, the groups did not do this and as a result frequently had to repeat a reading because of inaccuracy through carelessness.

Interestingly this issue of struggling to spend the requisite time on planning led to interesting discussions about Bantu education. One student was adamant that good planning was the mark of good governance and the discussion moved into sensitive territory, but perhaps territory that a facilitator should if possible tackle – and that is that Bantu education was particularly ineffective when it came to inculcating good planning skills in learners. In fact it may indeed have been deliberately designed to prevent learners from gaining these skills. Students responded well to these discussions with some of them reporting that it was very useful to understand why they find planning so challenging because then it becomes something that is open and spoken and enables students to better challenge themselves to overcome their difficulty.

Students' evaluation of the session

Students liked:

- Learning about swales and bunds because "I can see how effective these methods can be in conserving and harvesting water and preventing soil erosion in my community".

Students didn't like:

- "The fact that we are so bad at planning because it makes us to be so frustrated in these activities".

Suggestions for the future:

- Students were determined to put more effort into planning their group activities better.

Moving forward

Next week (Session 8), students will be at the prac site KwamNyandu, completing swales and digging fertility pits before starting on greywater and roofwater harvesting.

Other issues

Methodology/theory

Certainly the manual activities already contain important aspects of the approach I want to write about, however, I thought it may be useful to share with the team a methodology (based on the work in French educational theory, theories of social constructivism, experiential learning, etc) I try to work with during the sessions . I say ' try,' because time constraints, student resistance and factors like my own impatience with slow progress often make it a challenge and I certainly do not always manage to follow the model as successfully as I would like. However, when it comes together, it is an effective approach that I would encourage facilitators of any learning process to try.

Step 1: Devolve task (responsibility) to students

Much teaching makes no attempt at motivating the students to learn the desired content. As a result, the students must trust that the teacher's/lecturer's organisation of content and tasks will indeed lead to relevant learning. But for most students, the stages of the process and the content are not obviously linked.

Instead, I work with the notion that learning is fundamentally goal-directed. Therefore, the first task of thefacilitator is to devolve the task to the students. This does not mean explaining the content as much as getting 'buy-in' from the students in the need to solve a problem. Thus, rather than start with an activity and ask its purpose, I try to start with a problem, a dilemma, or a challenge.

For instance, in order to design swales, we need to be able to map the terrain. So, how do we measure slope?

Do whatever it takes to get students to take responsibility for their own learning. Ask questions like:

- why are we doing this activity?
- What problem are we trying to solve?
- How does this link to other parts of the course?

  [For example: "why are we measuring the slope?" "why do think you need to know how to?" etc]

Step 2: Situation – 'adidactic'

The point of this 'adidactial' situation is for the students to construct the necessary learning as a response to the original problem. It is adidactical because the idea is that the students must be able to work as if this was not a learning situation but an actual problem they are trying to solve.

Now that we have identified the problem and figured out "why?", students are asked:

- How are we going to solve the problem?
- What tools might we need?
- What plans might we need to make?
- Who should do what?

In small groups students try to figure out answers to these questions.

Step 3: Situation – didactic

At this stage students try to follow activity instructions in the manual with facilitation support

This step is characterised by interaction and dialogue between student and facilitator with facilitator providing a lot more didactical input where it is deemed necessary. Introduce various tools, offer some suggestions, ask critical questions, refer students to specific parts of the manual and generally provide guidance. Unlike the adidactical situation, it is here clear that the students did not manage to solve the problem on their own. Again, this provides the motivation for exposition by the facilitator

Note: steps 4 and 5 are the debriefing stages of the activity

Step 4: Institutionalisation (reflection and integration)

By engaging the various ideas and contrasting what students came up with in the 'adidactical' situation with what was proposed to them in the didactical situation, the students are guided towards the commonly accepted concepts, tools and processes. This is a communal or social process where the incomplete ideas and concepts which may have been constructed by individuals or groups of students during the activity are contrasted and connected to form more coherent conceptual structures, etc (in this case using the manual and/or facilitator experience). It then becomes knowledge shared by the class, on which they can build in the next task.

Step 5: Reflect and learn from the experience

> (As I consider the affective aspect as important a part of learning as the cognitive, I have added this fifth step which includes 'reflection' on the processes, social interactions, as well as own learning style (meta-learning), and importantly thinking about how it would be done differently next time).

- What happened before, during and after the activity?
- How did I experience the activity?
- How did we as a group experience the activity? What lessons can we learn from what we did?
- How does our learning link to what the manual says, if at all?
- If our experience contradicts or alters the theory in the manual, why is this?
- If we could do the activity again, how would we change what we do?

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Facilitator evaluation of Session 8 [Lessons 15, 16, 17]

Students

This week 13 of the 15 students attended the session at KwaMnyandu, the prac site.

Session 8 Evaluation

As usual we spent a good part of the first hour going over unanswered questions from previous sessions, going over requirements for final assessment and discussing feedback from marked assignments and groupwork [see comments on assessment below].

Activity: Student demonstration – measuring slope using line level

Some students really struggle to grasp even the simple maths involved in measuring slope. There is also the challenge of actually doing the calculations once measurements have been taken. One of the students who I would regard as one of the better educated, requested I assist her in the demonstration as she couldn't get her head around the concept.

A mathematics professor whom I consulted to help me explain the maths of roofwater harvesting [see next session] pointed out that, strictly speaking, the formula:

Percentage slope = rise over run times 100 is incorrect and can be extremely misleading.

It should be:

Percentage slope = rise over run times 100%.

Activity 22: Fertility pit

Reflections on the process

This activity went pretty smoothly overall and there's not much I want to comment on. However, it was interesting that students still struggled to shake the tendency to gloss through the instructions in the manual and plunge hastily into digging without taking time to plan and think things through. As a result, two of the groups dug sheer sides to their pits, failing to note that the pit should be concave [bowl shaped]. While they observe in reflection that they tend to make mistakes because of poor planning prior to implementing an activity, in practice, they continue to make the same mistake. This issue of breaking the habit of poor or hasty planning has become a key focus for reflection for these students on the module.

Activity: greywater harvesting

Due to time constraints, this activity was hastily done and took the form of a quick look at the homestead with a short input on greywater harvesting options by the facilitator.

Assessment

Much of what I write here might seem trite to the experienced lecturer/facilitator and indeed these are often things facilitators should know already and needn't be reminded of. However, some facilitators are less experienced than others and even experienced facilitators sometimes neglect to address the basics. Furthermore, it's important to remember that often students studying at this level have come from disadvantaged schooling and educational backgrounds which has led to poor learning habits which a facilitator can and should challenge.

While there are a few students turning in excellent work, I am finding myself disappointed that some students' written work does not match what I have judged to be their real understanding of the work they are doing and the concepts they are engaging with during the practical sessions. Participation during the practical sessions is lively and rich with evidence of learning while too many written assignments fall far short of meeting the criteria I set.

While inviting students to take me to task if I am misunderstanding their struggles and lack of understanding, as I gently as possible and with some humour I lambasted a few culprits whom I felt were simply trying to see how little work they could get away with. I was surprised (as I often am) at the coy looks and smiles I got for accusing people of being lazy and taking a chance. It's important for the facilitator to make judgement calls sometimes and challenge students to put in the work required to do well and provide evidence to the facilitator that learning is indeed taking place!

It's important to remind students from time to time of some basics like:

- Read each question carefully and ensure that you understand what is being asked of you. If you think you don't understand – then ASK! [students often don't make sense of the question and write off the topic. Often they simply don't take time to ponder the meaning of the question and write the first thing that comes into their heads]
- Check the mark allocation for each question. If the question is worth 30 marks, then one sentence cannot possibly earn you even close to a pass mark for that question. [students often fail to link a question mark allocation to the substance of the response expected of them. It helps to remind them!]
- Take time to think about how much you can actually write in response to each question. Then take the time to write down all your responses. Rather write more than less! [so often students scribble off one or two thoughts and move onto the next question. In a face to face situation, I've found that if one probes the student's understanding, there is a lot more that he/she could say].
- When you have finished, check your work for clarity, spelling, grammar, etc.

Students' evaluation of the session

Students liked:

- Being in the same group as last time; learning to work with each other; getting to know each other better;
- Gaining practical experience in the application of WHC methods;
- Studying the 'howto' process in the manual, planning and then implementing the activity with the cooperation of the group;
- Learning from mistakes, like not planning division of time and labour effectively
- Every week learning new methods and ways of gardening;
- Reflecting on process of doing activities and giving each other constructive feedback.

Students didn't like:

- Working so hard outdoors in extremely hot weather;
- Accepting criticism [feedback] from members of other groups because sometimes it was difficult to not take it personally;
- The conflict which emerges over shortage of tools and resources;
- Sharing resources when teams are under pressure to finish in the allocated time.

Suggestions for the future:

- Students need to plan activities better to avoid stress and mistakes
- Students need to speak with more respect when giving each other feedback.

Moving forward

Next week is the last session of the module. The day will be taken up by a field trip to a local organic farm and shop and evaluation activities.

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Facilitator evaluation of Session 9

Students

13 of the 15 students attended the class session and field trip.

Session 9 Evaluation

Maths tutorial on calculating rainwater runoff

The expert advice I got for conducting this tut proved invaluable and I think most students were able to grasp the purpose, the principles and the calculations.

In the first place, I linked this activity to the early research and activities we did in the module on local rainfall patterns. I believe this led to some 'aha' moments for students as they saw the importance of knowing how much rain falls in the area in which they are working with smallholders. Perhaps its important to say that one tangible thing the next draft of the manual could do would be to identify and make these kinds of links across chapters and concepts more explicit for both facilitators and students.

Insert: Lesson on understanding and calculating roofwater runoff

1. **Understand rationale**

   1.1. Why measure rainfall runoff?

2. **Input from facilitator**

   2.1. Explain that 1mm of rain falling on 1m^2 equals 1 litre of water.

3. **Calculations**

   If the above is true then:

   3.1. If 10mm falls on 1m^2 how many litres will that be?

   3.2. If 50mm falls on 1m^2 how many litres will that be?

   3.3. If 100mm falls on 1m^2 how many litres, etc?

   3.4. Get students to do a few calculations, varying the m^2, eg: how many litres if 100mm falls on 22m^2, 50m^2, 100m^2, etc.

4. **Input from facilitator**

   4.1. Ask how you would calculate expected rainfall on one roof over one year

   4.2. Explain concept of 'plan area of roof'

4.3. Explain formula: rainwater runoff (litres) = roof surface area x annual rainfall (mm)

4.4. Problem: what about loss due to splash, evaporation, absorption, etc?

4.5. Explain runoff coefficient and then add coefficient factor to calculation to get:

rainwater runoff (litres) = roof surface area x annual rainfall (mm) x runoff coefficient

4.6. Explain that if you multiply by a number bigger than 1 you get a higher number, whereas if you want to calculate in a loss, then the number should be less than one which is why the runoff coefficient is always less than one.

5. Calculation

5.1. Provide some examples for students to practice

Field trip to Dovehouse Organics, Howick

This trip and the follow-up reflections on its value were somewhat compromised by poor organisation on the part of the University travel office which failed to make the booking. As a result nearly two hours were lost. Although the trip to Dovehouse worked out well, the follow-up evaluation sessions had to be cut short and students completed their module evaluation forms at home.

Students told the host they were impressed with the farm's use of:

- swales,
- indigenous buffer zones,
- organic and natural pest control,
- chicken and pig tractors;
- extensive mulching,
- food forest systems,
- nitrogen fixing trees,
- shade and sun,
- intercropping,
- community partnerships,
- crop diversity,
- drip irrigation from gravity feed source.

Water Harvesting and Conservation

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Facilitation Manual Facilitator evaluation of Session 1

Students

12 of the 14 students attended the class session.

Session 1 Evaluation

This first session of the facilitation module went off fairly well, although students were somewhat distracted because of their looming deadline for submission of their portfolios for the Technical module.

Expectations

During the session on expectations students revealed that they were expecting to gain an in-depth knowledge of how to facilitate people-centred development. They said that while they had already completed a module on introduction to development, they hoped to get more out of this module by spending more time on the processes and methods involved.

One student hoped to gain knowledge of how to tap the resources required for development and more inputs from the facilitator on budgeting and fundraising. I explained that this was not part of this module. His pertinent question was how do we justify teaching participatory education and development principles and methods through the medium of a course which is already designed and formalised. I had to agree that there is a degree of anomaly in this approach, but as always deflected blame onto the constraints of having to work within the University and NQF frameworks.

Activity: what is a facilitator?

This activity flowed pretty well. The students have been fairly well exposed to such discussions already in previous modules and the activity served more as a refresher than anything else.

Overview of course

I thought that it might be useful to include acompelte table of contents up front of the manual so that its possible to get an overview of the module without skipping from chapter to chapter.

Activity 1 & 2: What is progress? Groupwork

While some aspects went quite well, namely coming up with and discussing major developments in history that have influenced progress, which both students and I found enjoyable and fascinating, other aspects proved challenging. Students really seemed to struggle with the concept "the idea of progress". While they grasped how individual discoveries influence the course of history and impact in various ways on peoples' lives and livelihoods, they struggled to understand what "the idea of progress" meant and we spent more time than planned trying to understand better. They also struggled to grasp the meaning of 'values'. What I did which seemed to help was to identify 'Ubuntu' as a value system and then spent some time unpacking the meaning and constitution of the concept as a way of coming to a better understanding of what 'values' were.

The Meatrix

Unfortunately it was not possible to download and copy a copy of the Meatrix in time for the session. This had to do with UKZN's recent blocking of these capabilities via their LAN and Wireless networks. However, arrangements have been made to enable students to do this activity during session 2.

Discussion: Impact of 'the pursuit of progress'

See my comments on Activities 1 and 2. It took much longer than expected to get to the point where a majority of students began to grasp 'the pursuit of progress' as a concept. In retrospect, I would design an activity which begins with a discussion based on the discussion of the concept provided in the manual that then leads into a process whereby students reach consensus on a definition or even a set of definitions that make sense to them.

Discussion in plenary: TOT vs the participatory approach

Most of the substance of this discussion the students have already covered during a previous module: *Introduction to Adult Education* and so this activity served as a brief but useful recap of what they already knew.

Introduction to PTID

To change the format of delivery somewhat, I made an OHP of *Figure 2.2: the PTID Process* and after a brief recap of the action learning cycle [which they have covered in two previous modules], I gave a short lecture introducing them to PTID and linking the structure to the similar process they will be undertaking during their structured service-learning experience in the second semester. This went well.

Student evaluation of the module

Students insisted there was nothing that they didn't like or wanted to change in the session. However, I definitely got the sense that they simply wanted to get out and get on with finalising their portfolio submissions. They could not be pressured into further comment.

Students liked:

- The way PTID was introduced with a strong link to the forthcoming service learning modules *Development in Practice [DIP]* in the second semester. They felt this approach gave them a good underdstanding of what to expect from PTID while demystifying DIP.
- They felt that going through each chapter of the module, allowing them to comment was a good example of a 'bottom-up approach'.
- They enjoyed a break from the format of prac site activities and said they enjoyed being able to sit and discuss at length in the classroom.

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Facilitation Manual Facilitator evaluation of Session 2

Students

Only 9 of the 14 students attended the class session. Students who attended said that the poor turnout was largely due to the fact that it was Easter Friday the next day and that some students were travelling long distances to attend church services and so needed to leave early. No students contacted me to excuse themselves on these grounds. At least half the students who attended the session begged to be allowed to leave at lunch time because they too had church commitments that afternoon. It should be noted that because the Certificate Programme does not follow the normal academic timetable, these attendance dates were negotiated with students more than a month ago. Given that I would be left with less than 5 students if I had insisted on pushing on to 3.30pm, I agreed we could finish early. We did what we could to make up time and left some activities for session 3.

The smaller class and early finish deadline together with the technical challenges experienced with showing the Meatrix video clip resulted in a session that was rushed and incomplete which I found frustrating and unsatisfying.

Session 2 Evaluation

Activity 4: Assess your participation;

As a rule students like to take much longer on their group activities in class than the manual suggests. This activity was no different and students took double the allocated time just to complete the activity. We managed to gain time by not debriefing the activity afterwards. A brief input by me before the activity on the importance of agency & participation in PTID provided the context for the discussion.

Activity 5: Local Knowledge

Due to technical hitches with showing the Meatrix video clip which I had to attend to, students did this activity on their own. By all accounts they really enjoyed this activity although I could not share it with them.

Activity 3: The Meatrix

We managed to save some time by keeping the debriefing session short and making Activity 3 a compulsory submission for the portfolio.

Some students reacted with alarm during the debriefing which consisted mostly of a brief explanation of the video clip. It will be interesting to read their written submissions.

After tea we came up with what we hoped would be a solution to the challenge of time for the remainder of the session. We thought that we would conduct the remaining acitivities as plenary discussions that I would facilitate and in this way hoped to be able to get through the remainder of the session by lunch.

Plenary discussion: technology & local/indigenous knowledge

I distributed the mixture of indigenous and non-indigenous plants and vegetables I had brought to the session. I asked students to classify the specimens according to what they believed to be indigenous/traditional and exotic. I had brought:

- A stalk of sorghum
- Mielie meal
- Handful of kidney beans
- Amadumbe
- Packet of sesame seed
- Sweet potato
- Variety of local spinaches (amaranthus, blackjack, chickweed, chenopodium, etc)
- Pumpkin seed

It was a fascinating discussion around local/indigenous/ traditional foods. Most of the students believed mielies, beans and pumpkin were indigenous to Africa and were most surprised to be told that they came from other countries. Students correctly identified the spinaches as local and knew the local names. Most did not know the sesame seed.

The conversations around traditional/local indigenous knowledge and how it relates to PTID were fascinating for students and me. It was really useful to have the opportunity to fit these discussions into a bigger discussion about the forthcoming Development in Practice modules in the second semester because students routinely forget all they have learned about participatory approaches to development and waste weeks of their time designing development plans which they present to the faculty as a fait accompli, before they have any communication with community members who are the supposed beneficiaries of the intervention. I will be surprised if these students graduate from this PTID Facilitation module and go on to launch into development project planning without participation from the community.

Discussion: facilitation, cultural diversity and stereotyping

This discussion flowed organically from the previous discussions with a more in-depth focus on facilitation in this context. What I feel was important was an exploration of the diversity of situations that a facilitator using participatory methodologies needs to be sensitive to. The importance of doing ones homework was also emphasised. Some tricky situations requiring close attention to the detail of local knowledge and experience as well as stereotypes which would help to be prepared for were identified and discussed:

- Rural communities where there will be resistance to participatory facilitation methods
- Mixed groups of the elderly and youth
- Groups with diverse needs and expectations of the facilitation process

- Power dynamics between leaders and their supporters whose support of the process is critical/desired
- Where misinformation or mischievous misleading of participants by other parties will hamper process
- Where a history of violence in the community has bred endemic mistrust among participants and even a tendency to resolve group conflicts violently
- Where a community suffers from 'development burnout' [where there have historically been successive development interventions by diverse development entities that have left the community wary of any development interventions.

Students reported enjoying exploring potential situations in this way as they said it helped them to be aware of possible situations they might find themselves in.

The discussion on stereotypes focussed for a while on black-white stereotypes. An amusing stereotype worth mentioning is that white men, despite wealth and status, choose to buy second-rate clothes from Mr Price!

Student evaluation of the module

Due to the time constraints this activity did not take place this week.

Water Harvesting and Conservation

Course pilot UKZN Jan-May 2010

Facilitation Manual Facilitator evaluation of Session 3

Students

Today 13 out of 14 students attended class at UKZN.

Session 2 Evaluation

Intro to Section 3: Knowing yourself & Johari's Window

This activity I ran quickly and simply as a brainstorm on why knowing yourself is important for facilitators followed by a mini-lecture on Johari's window and a discussion on how the various panes of the window interrelate. The discussion turned into a very entertaining session as students and I shared various different scenarios that would impact on the size and shape of the various panes.

Eg: A minister who preaches fervently on the importance of staying faithful to one partner and condomising is hiding the fact that he is having unprotected sex with his mistress (a member of his congregation). When the affair is uncovered the minister's OPEN window expands remarkably while his HIDDEN window shrinks. The humour comes in encouraging students to think up scenarios as well as inviting them to alter the panes accordingly once the scenario is shared. This was done on a blackboard to make shifting the size of the panes with ease.

Brainstorm other ways of developing self knowledge

This activity was conducted as a fairly straightforward ten-minute brainstorm. Two interesting ideas to come out of the interaction was 1) a suggestion to study astrology more closely [this was a serious suggestion], 2) conducting a "personality SWOT analysis" [one student had personally undergone such a process as part of a facilitation in development workshop he attended once]. Out of interest, immediately after the brainstorm, we each spent five minutes going through a personality SWOT analysis in the context of facilitation, ie: conduct a SWOT of yourself as facilitator. This was an interesting process and I thought that it may deserve more exploration somewhere in the course.

Activity 9: Exploring attitudes

Writing individually was a novel experience for most of the class as such activities are generally few and far between. Students seemed to find it a useful exercise however, to reflect on how peoples' attitudes impact on others. Some students shared moving stories of how the negative attitudes and behaviours of people they work with impacts negatively on their own moods and ability to perform optimally in their jobs. This was happily countered by sharing of stories of how positive attitudes and behaviours of colleagues and friends can uplift and carry one through challenging times.

Activity 13: Body language & fun game

This was another activity that lent itself to humour as students reflected on the messages their 'frozen' body stances gave to others in the group. This was followed by the fun activity

suggested the facilitators guide where a list of emotions are called out to the class which they then demonstrate in turn. Significantly this was a useful opportunity to link to the sessions we had on prejudice and cultural diversity as we discussed how different gestures, expressions and stances mean different things to groups who differ in terms of culture/race/sex/age/class, etc and how important it can be for facilitators to be sensitive to these differences.

Activity 12: Knowledge sharing

This was a pretty straightforward activity which I conducted as a quick lecture on different components of knowledge, ie: explicit and implicit, followed by a session in which students were asked to brainstorm answers to questions 1 to 4 on newsprint. Students tended to get confused at times between explicit and implicit knowledge as there can be overlap – eg: rainfall information, information of farming systems, community leadership structures, political dynamics, etc. It was useful to emphasise that its not critical to distinguish exactly between the explicit and implicit and that they are rather terms which may help us to distinguish between knowledge that is in the public domain and knowledge which comes specifically from peoples' own experience. Where there is overlap we agreed that it was a good opportunity to compare different sources of knowledge and information and the importance of not simply taking one set of information/data as the ultimate 'truth'.

Activity 14: What makes a good listener/ Activities 10, 11: Value shaping & analysis

Instead of starting a discussion on what makes a good listener, I thought it would be helpful for students to undergo a situation wherein they would both experience and practice good listening skills themselves. This would enable them to experience these skills first hand and thus be in a better position to grasp how effective good listening skills can be. Also, considering always feeling constrained by time, I figured it would be possible to combine the activity on values with a listening activity. I used an activity loosely known as concentric circles as the listening activity with the subject being Activity 10: "what values have shaped my life?". The activity was followed with a debriefing on the importance of good listening skills for a facilitator and an analysis of values (Activity 11). [see below]

Listening circles – WHC

Preparation:

Have participants arrange their chairs into two circles – an inner circle and an outer circle. Each chair in the inner circle must face out and be opposite to a chair in the outer circle, which faces in. In this way people will sit in the chairs facing each other.

Have participants sit down. Ensure that each participant has a partner sitting in a chair opposite him/her.

Note: Do not give all the instructions at once. Rather give instructions at each step of the activity.

Introduction

Give participants the topic: "think of 5 values that have shaped the way you now think and act". They will have two minutes to think of what they want to say in response to the topic. Emphasise that everyone will have a chance to speak on the topic so they should all give thought to the topic. Then participants in the inner circle will speak to their partners in the outer circle for exactly two minutes on that topic. The rule is that the listener must listen attentively for the two minutes without interrupting.

Step 1: Start the activity

Repeat the topic and allow two minutes for them to think. Then begin: have participants in the inner circle speak for two minutes on the topic. Ensure that speakers are not interrupted by their partners during this time.

Step 2:

Tell participants that now the participants in the outer circle (the listeners) should repeat back to their partners what they heard them say on the topic. They have one minute in which to do this. Rule: no interruptions. Have the listeners give their feedback.

Step 3:

Tell the participants that now the speaker should provide feedback to the listener: How well did they listen? Give praise for things well remembered. Did s/he leave anything out?

Step 4: Swop

Now have participants now repeat this process on the same topic, with the listener (outer circle) becoming the speaker and the speaker (inner circle) becoming the listener.

Speaker speaks for 2 minutes on the topic.

Listener repeats story to speaker (1 minute).

Speaker gives feedback to listener (1 minute).

Step 5: Move!

Now have participants in the inner circle each move one chair to the left so that everyone now has a new partner.

Step 6: Debriefing/discussion

Get participants to reflect:

What was it like to be listened to – really listened to?

What was it like being the listener?

Did the fact that you knew you had to repeat what the speaker had said, change the way you listened?

Why is effective listening important in the context of facilitating water harvesting and conservation?

Note: We do this listening exercise to help us to practice giving full attention to what another person says, and in turn to experience for ourselves the pleasure of being really heard. Both of these things are extremely important in facilitation. For one reason, you must be able to hear everything your participants are saying before you can be of optimum assistance to them.

Most people seldom have the experience of being really listened to and heard. When they do, they usually feel that you value their knowledge and experience and will be more likely to work with you on finding creative solutions to whatever challenges are being identified. Resistance to you as an outsider is diminished and they are more likely to feel empowered and willing to own whatever decisions are taken about what work should happen on their sites.

Since the best solutions come from within the persons affected, good listening, which draws these out, is a much more effective means of facilitation than is good advice, which tends to stifle them. Listening is one thing people can really do for one another. We cannot solve each others' problems, but we can listen. It is the basic counselling skill. All of us, no matter how good we are at listening, can always take another step and learn to improve this skill.

Activity 15: Presentation skills – groupwork

I think I would call this activity "Speaking skills" rather than "groupwork" without a subject title, in the manual. Instead of first discussing speaking skills and then doing the activity I chose to have students do the Activity 15 first, then during feedback, stimulate discussion on speaking skills. Having just gone through the fairly stressful process of preparing and presenting, I reckoned that students would be more receptive to this discussion and eager to focus on how to improve their speaking skills in this state. The activity worked well in this format and students got a lot out of both having the opportunity to present to a small audience as well as to receive constructive feedback [see student evaluation below]. The model for structuring constructive feedback was:

1. What was good about the presentation and why?
2. What was not good and why?
3. What could you improve and how?

Something that I did not anticipate was the opportunity the debriefing on the activity provided for revisiting Johari's window. Some of the students noted that receiving constructive feedback on their facilitation abilities, offered valuable insights, effectively diminishing their blind spots and thus expanding their open pane and making them better facilitators!

Questioning skills & Activity 16: Tell me about yourself

We ran out of time towards the end of the day, partly because I did not allow for 20 minutes or so to brief students about the on-site assessment next week, so I conducted a brief lecture on questioning skills and urged students to complete activity 16 on their own at home.

Student evaluation of the module

Students liked:

- Practicing presentations in small groups and receiving constructive feedback – they said they found the smaller group format much less threatening and it gave them focussed time for presenting as well as receiving feedback.
- The listening circles activity because it: helped us to listen without interrupting; allowed us to learn more about it each other; helped us appreciate the value of listening as well as explore each others and our own values.
- The body language activity because it was fun, helped us to see how expressive our body language and gestures can be and we had a chance to discuss different values and interpretations of gestures.
- Giving and receiving feedback after our presentations was very useful because it helped us to identify our blind spots as facilitators and helped us to improve our skills.
- The values and attitudes activities because they helped us to identify our own positive and negative values and attitudes, how negative attitudes hold us back and help us to develop a positive attitude as a facilitator.

Students didn't like

- Johari's window because it made us confront some hard lessons about what it takes to develop self-knowledge.
- Making presentations because we found it hard to speak in front of other people.
- Having such short time to prepare a presentation because it puts us under too much pressure.

Students would change:

- Have more time for presentations.

Next week

Next week activities 17 and 18 will be conducted on-site as assessment exercises. This is counter to advice in the facilitator manual. Lets see how it works out!

Water Harvesting and Conservation

Course pilot UKZN Jan-May 2010

Facilitation Manual Facilitator evaluation of Session 4

Students

Today 13 out of 14 students attended class at UKZN.

Session 4 Evaluation

Presentations and demonstrations

In the facilitators' guide the suggested lessons are supposedly +- 2 and a half hours each, but in the Section 3: Additional Guidelines and Suggestions only one Lesson (8) is allocated for the Presentations (Activity 17) and Demonstrations (Activity 18) which each take at least 2 and a half hours to run. I should have picked this up in my planning but I overlooked it and only spotted my mistake the day before the session while I was preparing. This oversight has thrown my session and lesson planning out by one lesson. As my luck would have it, we spent some time on presentation/facilitation skills (Lesson 7) in the last session and students have also covered this in previous modules. However, It might be useful to relook at the Section 3 table in the light of this.

I also planned to build the discussions around how to handle quiet people, side discussions and high talkers into the debriefing of the presentation and demonstration sessions. This worked well as, again, fresh from the direct experience of presenting and demonstrating on site, students were very receptive to these discussions – more so perhaps than if we had covered the topic beforehand.

One of the interesting things to come out of the day of assessment was that three of the students who struggle with presentations (and struggled today) turned in brilliant demonstration performances. It was quite an eye opener to witness students who squirm awkwardly, hesitate and stumble through a presentation with obvious discomfort throw themselves into a demonstration with comfort and palpable relish. It highlighted for the group the importance of having some kind of prop or visual/manual aid a round which the individual can organise his or her presentation.

On the whole the presentations went better than the presentations, students showing more confidence in the practical application than the oral description of methods they had learned. However, where students fell short was on the structure of both presentations and demonstrations. Introductions and conclusions were generally weak, so we spent time in debriefing exploring what makes for good intros and conclusions.

Students also were weak in setting the context of demonstrations and few included any rationale for the methods they were demonstrating, like: what is the purpose of line level/A-Frame? Why would we want to measure and mark out contours? What are the uses of a swale or stone bund? Again its this inherited tendency to regard new activities in isolation from what has gone before, a struggle to link what we are doing now to what we have learned and done before, to delink an activity or method from its purpose. WE spent quite

some time looking at why this happens and how it detracts from the impact of a presentation/demonstration.

A number of students also deserved to be rapped for under-preparation and this they were duly given. Students also tended to not regard the rest of the group as having to play much part in their demonstrations and only turned to engage them fully during question time. During the debriefing we dealt some on the importance of engaging the interest of one's group early and involving them in exploring the rationale behind the methods that are being demonstrated.

Student evaluation of the module

Students liked:

- They found the detailed individual feedback on their presentations and demonstrations very useful " this feedback you give us shows us where we go wrong and how to improve our presentation next time".
- Some students enjoyed doing individual presentations and demonstrations for a change as they said it enabled them to work on their own, take full responsibility for their own work, not have to put up with group dynamics and not experience pressure from others.
- Some said they enjoyed having a question time at the end of each presentation and demonstration as this allowed greater participation and engagement from the rest of the group.
- Most felt that this was a good opportunity to practice their facilitation skills and did not mind too much that their performances were assessed.
- They also said that it was good for them to facilitate the methods that they had learnt in the previous module, they enjoyed making the links between modules and felt it helped them to revise what they had learned previously.

Students didn't like

- Some said they found making presentations in the field quite a challenge – they missed the comfort and infrastructure of the university setting.
- A couple of the students said that their classmates had not respected their right to make presentations without being joked at and distracted.

Students would change:

- The same students who said they were distracted by their follows requested a act more firmly to censure those who were disruptive.

Next week

Next week we are focussing on computer and internet research skills on campus.

Water Harvesting and Conservation

Course pilot UKZN Jan-May 2010

Facilitation Manual Facilitator evaluation of Session 5

Students

Today 11 out of 13 students attended class at UKZN. One student withdrew last week due to finding employment in another city.

Session 5 Evaluation

Evaluation of the course so far (with JJ Wigley)

As JJ Wigley planned a visit to observe a campus-based session of the course, we decided to change the habit of conducting a snap evaluation of the session at the end of the class and instead spend a dedicated hour to discuss students' experiences of the WHC course (including the Technical manual) first thing in the morning. The session was facilitated by Tim Houghton with inputs from JJ. By the time we got going however, we only managed 45 minutes but some interesting discussions ensued.

Students liked:

- Students said they thought the course on the whole would be useful in both rural and urban contexts. Some said rural people were more open to harvesting and drinking rainwater and would be keen to learn these methods as they often did not have on-tap water sources. Others said it suited urban people who had to pay for piped water and thus would be keen to conserve and harvest water as would save them money.

- Students said that learning new techniques for growing vegetables more effectively was especially useful to them. In particular they found the practice of swales, trench beds, bunds, diversion furrows and fertility pits useful in the sense that it links water harvesting to more effective and sustainable vegetable production which was not only new to them but also very useful. They felt empowered with this knowledge which they said was so simple but cost effective and sustainable.

- It was interesting to note how students were struck by how water harvesting knowledge and methods could save people time and labour. They were thinking especially of elderly people (who tended to be more active gardeners than the youth). They said that while there was initially hard work like digging of swales, trench beds, fertility pits, etc, that this work was mostly a once-off input which then just required some yearly maintenance. They said that swales saved people the effort of transporting water to crops by hand, kept the soil soft and moist which saved the labour of digging every year. They said that mulching was "so great" as it saved the huge labour of weeding in the summer as well as labour involved in bringing water to the garden. They were also impressed with a system that recycles all organic matter in the form of compost and mulch.

- Another group of students found greywater harvesting one of the most enlightening things that they had learned so far – "everyone has greywater" and so to harvest that

amounts to intelligent use of available resources and cuts down on waste they said. They pointed out that greywater harvesting was something so simple and also important in that it encourages a recycling/saving mindset in people with scarce resources.

- Some students were very impressed with a drip-irrigation system they saw on a field trip to Dovehouse Organics as they said that other irrigation systems for larger-scale systems they had seen seemed very wasteful in comparison.

- A group of students were enthusiastic about diversion furrows – the said that they had seen how furrows can save both time and money in that one doesn't need pipes or taps or other equipment –"you just have to dig the furrow and clear it out once or twice a year!"

- Some students highlighted as important what they learned about soils – "we can now assess the soil simply in our own places and remedy according to the assessment".

- Students mostly agreed that generally the language level of both manuals was appropriate

Students didn't like

- Some of them admitted that they found the digging and getting so dirty hard to accept.

- Others said that they had enjoyed the practical nature of the first module but were wanting to do more practical work in the Facilitation Module which so far they had found less practical and more classroom-based.

- Students said that as the manuals were used so frequently outdoors they tended to get very grubby.

- Some students felt that they would not be working with farmers but rather individuals who have small backyard gardens and so felt that the course focussed too much on working with farmers.

- A couple of students felt that the Review Questions adopted a conservative approach to learning. They said that the questions simply required them to find the relevant sections in the text and then transcribe the answers which they felt was neither challenging nor critical. *[My comment: While strictly speaking they are right about the educational approach, I personally found the review questions really useful in the sense that it forces students who generally don't read, to read the text! What I did was to insist that every set of Review Questions is completed and submitted. Once the questions are submitted I give the student a set of model answers for that set and mark a register to record the exchange (which mitigates against cheating). Students then submit these marked Review Questions as part of their summative portfolios and get their marks from critically comparing their own submissions with the model answers - which forces them back to the text again if they are to score well on the test.*

Students would change:

- Students suggested that the manual covers be reinforced with durable plastic.
- Some students said that they had been fascinated with methods such as *saaidamme* and *ploegvoere* which they seen in the Umhlaba video and read about in the manual and said they wanted to learn more about such methods.
- The 'usual suspects' in the group wanted less digging and insisted that the institution provide students with overalls so they wouldn't get their clothes dirty.
- Other students said they found that working so far from campus on someone else's plot a challenge. They wanted a dedicated WHC plot on the university farm that was safer, closer, involved less travel, properly fenced and would allow them to visit the site with relative ease to work on their plots outside designated WHC hours.
- Some students said that, while the language level was appropriate, jargon was not well explained. There was a suggestion that simple footnotes explaining jargon would help. Footnotes were better than endnotes they said because it was handy to have the explanation on the same page as the word appears the first time. There was also a suggestion that simple word games could be devised that introduced students to, and helped to familiarise them with jargon.

Lesson 9 – Activity conflict resolution styles

Given that my field is conflict resolution I found it hugely challenging to come up with a way to cover the subject in two hours during this session. I finally decided to build an activity around personal styles of responding to conflict which I felt would serve as a useful practical way to introduce conflict resolution to the group while covering topics like functional and dysfunctional conflict, the difference between collaborating and conflicting styles, resolving misunderstandings, etc. There really was little time to run an activity on the conflict resolution process so I directed them to the manual and provided them with written examples of how a six-point problem-solving process could be applied to a community development context. [see appendix to this report for outline of the activity I devised].

Lesson 10 – Activity 19- allow me to introduce myself

Students tackled this activity with enthusiasm and humour and generally did well. It was a good opportunity to give them further feedback on what they did well, what needs work and how they can improve their presentation skills. Again, students appreciated the feedback they got from fellows as well as facilitator.

Lesson 10 – Discussions on PTID

As the evaluation activity started late and we had booked internet facilities we needed to skip this activity to move on to Activity 20: Internet Research. The plan was to come back to these discussions after lunch. However, as Activity 20 went way over time, we did not get to the activity in class. I did however, hand out a list of key questions that I had planned to discuss in class. I was not hugely concerned that we didn't go through the questions as we had covered most of these during the discussion we had during the session when I introduced PTID.

Handout: key questions for PTID

- PTID is framework, not a set of rules. Stages can overlap each other
- Why is it important to be transparent/open about why you want to work in a particular community and to be clear about what you hope to do and what you are able to do?
- What are the protocols around meeting local leaders? Who do you approach first? Why? How do you approach that person?
- How do you plan for visiting local government departments? How do you know where to go? How do you find out who to speak to? How do you set up a meeting? How do you decide what will be discussed?
- What types of information might it be useful to obtain before entering the community? Where would you get this information?
- Should we force people to farm together in groups? Why? Why not? What could happen? What impact could it have on the intervention?
- Has anyone ever been in a workshop where someone conducted a needs assessment and then ignored most of the needs that were expressed? What impact did it have on the group? How did people feel? What was the facilitator's real agenda?

Lesson 10 – Activity 20: Internet research

Activity 20 went way over time, mainly because students were generally unaccustomed to internet research and some had very little experience of using computers at all. Also, JJ had invited along a colleague, an internet expert, who generously lead a discussion around internet issues and functions, fielded questions and generally helped JJ and I to guide through the activity. Students reported really appreciating this opportunity to explore the internet and more experienced students readily assisted those les experienced. I designed an assignment aimed at giving less-experienced students the same opportunity to score marks as those who were more experienced. In some ways this assignment was also aimed at preparing students for their service-learning modules in the second semester, where an ability to articulate challenges in tasks and how they were overcome is valued over how successfully tasks are completed [see appendix to this report].

Next week:

Next session students will be conducting Resource Mapping and Transect activities on site.

Water Harvesting and Conservation

Module: Facilitation

Lesson 9: Conflict resolution

Activity: Responding to conflict – personal styles

Introduction in plenary

People deal with conflict in different ways. Our responses often depend on things like the circumstances of the conflict (whether the conflict is at home, at work, within the community, etc.), who we are by nature (quick tempered, even tempered, tolerant or intolerant, etc.), and how we were raised/educated to respond to conflict (hit back, turn the other cheek, etc.).

Our past relationships (whether good or bad) with a person also play an important role in the way we respond to conflict. Obviously, the way we respond to conflict is very important because it will always influence the progression and the outcome of a conflict or potential conflict situation.

How do you usually respond to conflict situations?

Activity: responding to conflict

Instructions

Prepare a flipchart with a table as follows:

a) Respond angrily **[Confront/force]**	
b) Refuse to take part in the argument and walk away. **[Withdraw]**	
c) Apologise and ask her to give you another chance. **[Yield]**	
d) Bargain for a deal **[Compromise]**	
e) Ask to sit down together to find a solution that will suit both of you. **[Joint problem solving]**	

Place the flipchart on the wall.

Prepare FIVE cards of A5 size with each of the following statements:

1) I lose, you win.

2) I lose, you lose.

3) I win and lose some, you win and lose some.

4) I win, you lose.

5) I win, you win.

Part 1: How do you respond to conflict?

Instructions:

Read the following scenario to students and ask them to think about and decide for themselves how they would respond to a colleague in this situation.

Scenario:

A fellow facilitator at the college/NGO where you work has asked you to take her group for her while she visits her sister in Durban. You agreed to help her out and she agreed to pay you for the work you are doing for her. However, you have now been taking this group for her once a week for the last 6 weeks - it is a long time since she has given you any money and you are beginning to feel that she is taking you for granted. You have also been very busy lately and so have not been able to prepare properly for the facilitation as you would have liked. Now she is unhappy with the way you are conducting the facilitation with her group and is upset that you are not doing things the way she wants them done. She confronts you angrily and says:

"I am not happy with the way you are working with my group! You agreed to do this for me. What's wrong with you?!"

Do you:

a) Explain how you are feeling and ask her to explain her position more clearly. Then suggest that you sit down together to work out a solution that will suit both of you.

b) Say that you were so busy that you didn't have the time to prepare properly. You point out that you are doing her a favour and say that if she is willing to pay you what she owes you then you will give more time to preparing for her classes.

c) Apologise and ask her to give you another chance.

d) Refuse to take part in the argument and walk away, OR

e) Respond angrily and tell her exactly how you feel and what you think of her and tell her that you will never help her out again.

Give students some time to reflect on their responses then spend a few minutes canvassing various responses from volunteers. This is a good opportunity to bring some humour into the discussion. People generally have strong views on how they respond in these situations.

Part 2: Who wins?

Place the five cards in random order on the wall next to the flipchart. Ask students to match the "who wins?" phrases on the cards to each of the responses (a) to (e) on the flipchart. This exercise should take about 20 minutes or so.

Model answer:

Style	**Who wins?**
Confrontation/force	I win, you lose
Withdrawal	I lose, you lose
Yielding	I lose, you win
Compromise	I win and lose some, you win and lose some
Joint Problem-solving	I win, you win

Debriefing and discussion

Do you think you can identify what style you would usually adopt when faced with a conflict situation? What about other people that you know? Think of your spouse, your parents, your children, your colleagues. Can you identify any of them as having a "fixed" style of responding to conflict? In other words, do people that you know have a particular way of responding to conflict?

Some words for describing different styles might include: hard-headed, stubborn, arrogant, timid, no-backbone, friendly, co-operative, destructive, defensive, accommodating , etc.

Ask them if they think there can be such a thing as functional and dysfunctional conflict – ask them to give reasons for their answers; is there a difference between collaborating and conflicting styles. How do they resolve common misunderstandings? Lead students in a discussion from understanding the simplified table of styles and who wins to discussing how conflict is often more complex and requires different responses in different circumstances. Involve students in a discussion around when to use a particular style: It is important to understand that different styles are appropriate in different situations. For example, there are some situations in which forcing an issue or confronting a person may be more appropriate than, say compromising or joint problem-solving.

The following examples will help the facilitator and students to understand the complexities more easily.

Confront/force

This style may be **appropriate** if:

- There is an emergency.
- You are sure you are right and it's critical that action is taken immediately.
- Other people don't care either way.

This style may be **inappropriate** if:

- Joint problem solving has not been explored.
- Collaboration is important.
- Conflicts are always solved this way.
- People's self-esteem will suffer as a result.

Example:

Confronting/forcing may be **appropriate** if you have a deadline for a report. One member of your project team wants to delay the submission of a report to your funders. He wants you to include some information that you think is not critical at the moment and will mean delaying the report. You strongly believe it is more important to submit the report on time because funding depends on it. You state your case to the team and insist that the report is submitted immediately.

If the other person's self-esteem will suffer as a result you may need to rethink how you deal with this case.

Withdraw

This style may be **appropriate** if:

- The conflict is a small issue.
- The relationship with others is not important.
- Time is short and it is not important to reach a decision.
- Your power is limited but you need to block the other party.

This style may be **inappropriate** if:

- Both the issue and the relationship with the other party is important.
- You always use this style in responding to conflict.
- It will create bad feeling.
- It will deprive others of a useful conflict resolution interaction.

Example:

A relative who you do not care too much about confronts you at a family gathering. He is drunk. He says that you don't know how to make proper Zulu beer. He says that the beer is too sweet and that you didn't prepare it properly. The issue is trivial, he is drunk and the relationship is not important to you. It is best to withdraw.

However, if you know that withdrawing will make him very angry and will escalate the dispute, and cause division within the family, then perhaps you need to evaluate other options.

Yield

This style may be **appropriate** if:

- You don't mind what the outcome is.
- You have limited power but don't want to block the other party.

This style may be **inappropriate** if:

- You are likely to resent your yielding.
- You always respond this way hoping to win approval.
- Others wish to collaborate.

Example:

Yielding may be appropriate if you don't mind what the outcome is. A colleague wants the staff Christmas party to be held at her house. You want it to be held at your house. If this is a small issue for you, it makes sense to yield to her.

However, if you always yield in response to conflicts, then it may be appropriate to use this case (where the issue is small) to be more assertive.

Compromise

This style may be **appropriate** if:

- Co-operation is important but time does not allow for seeking a more win-win solution.
- Settling for a compromise is better than having no solution.

This style may be **inappropriate** if:

- Seeking a win win agreement is very important.
- You will not be able to accept the compromise later.

Example:

Your spouse wants to spend the weekend with friends. You want to spend the weekend with your family. You compromise. You agree to spend the weekend with your spouse's friends if you can pop in to visit your family on the way.

However, compromising would be inappropriate if you think you will regret this compromise later and be angry with your spouse and yourself.

Joint problem-solving

This style may be **appropriate** if:

- Both the issue and the relationship with the other person is important.
- Co-operation is very important.
- A creative solution is very important.
- There is a real possibility that a win win solution can be found.

This style may be **inappropriate** if:

- Time is very short and a quick solution is important.
- It is not a very important issue.
- You firmly believe the other party to be wrong!

In summary:

Confrontation may be appropriate if a quick solution is critical and others don't care about the outcome, but inappropriate if co-operation and preserving relationships is important.

Withdrawal may be appropriate if the issue is trivial, but inappropriate if both the issue and the relationship with the other person is important.

Yielding may be appropriate if you really don't care about the issue, but inappropriate if you are going to regret it later.

Compromise may be appropriate if settling for some solution is better than settling for no solution at all, but inappropriate if you are going to regret it later.

Joint problem-solving may be appropriate if both the issue and the relationship are important, but inappropriate if the issues are really unimportant.

References

ACCORD (2002). Transforming Conflict: Seeking African Solutions to African Challenges through a Participatory Learning Process - Learner Workbook. Umhlanga Rocks: African Centre for the Constructive Resolution of Disputes (ACCORD).

Reardon, B. A. & Cabezudo, A. (2002). Learning to Abolish War: Teaching Towards a Culture of Peace. Sample Learning Units, Book 2. New York: The Hague Appeal for Peace.

Water Harvesting and Conservation

Facilitation Manual

ASSESSMENT RUBRIC

Assignment 2: Activity 20 – Internet Research

Student Name_____

Student Number_____

KEY TO ASSIGNING MARKS
1 = Assessment criteria not met; 2-3 = Assessment criteria partially met;
4-5 = Assessment criteria achieved; 6 Assessment criteria exceeded

Question	Criteria	Mark
1. Describe the specific area that you researched	You name the geographical area that you researched; state which province it is located and the name of the nearest big town or city	
2. Print out the climatic information that you found and reference the relevant website	You supply climatic information relevant to the area you researched. Information should include: Annual rainfall; rainfall seasonality; average minimum and maximum temperatures. You should have information from each of the THREE websites. Each bit of information is referenced according to the website from where you obtained the information. Where you have less than THREE reports you need to explain why this is so.	
3. Was it easy to find the information? Why? Why not?	You write a few sentences describing how easy or difficult it was to do the exercise and give reasons for your answer	
4. Which websites were most and least useful?	You write a few sentences describing which websites were most and least useful and give	

Why?	reasons for your answer.	
5. Was it easy to download information? Why? Why not?	You write a few sentences describing how easy or difficult it was to download information and give reasons for your answer.	
6. Which websites had other information that you found interesting or useful? What did you find?	You write a few sentences describing the additional useful or interesting information that you found and say where you found it.	
7. What problems did you have accessing information on the internet? How did you respond to the challenge?	Write a few sentences describing any challenges you had to accessing the information and describe how you responded to the challenges. If you experienced no challenges, explain in a few sentences why it was so easy for you.	
TOTAL		**42**

Comments

Water Harvesting and Conservation

Course pilot UKZN Jan-May 2010

Facilitation Manual Facilitator evaluation of Session 6

Students

Today 11 out of 13 students attended class at the prac site.

Session 6 Evaluation

Lesson 11 - Activity 21: Make a Resource Map

For this activity students, by their own choice, requested working in gendered groups. This probably grew out of the women's frustration as five of them waited for nearly half an hour for the rest of the class to turn up on site. Figuring it would be better to make a start without the rest, the women thought it would benefit them if they be allowed to form a group of women for the activity which was also slated as Assignment 3. This turned out rather well as the women threw themselves into planning the task with enthusiasm and had the late-comers (most of them men) scrambling to catch up and save face. As a result of starting late, the men's group had to resort to hasty planning.

The importance of good planning for activities has become something of a watchword for this group as they have seen repeatedly how neglected planning leads to confusion of purpose, conflict among members and timewasting during activities. Still, however, they struggle to make sufficient time to plan thoroughly. It is as if the habit of plunging headlong into action without consideration of how the process could most effectively be conducted is so strong that it continues to overrule the better judgement so recently gleaned from hard experience.

This activity, happily, seemed to go better as students showed some improvement in allocating tasks among members before setting off to make a resource map. I took a small group of intrepid volunteers for a walk to the top of the rocky hill overlooking the community where we are working. Students that came with me clearly enjoyed the activity and explored the terrain eagerly and with curiosity.

Upon returning to the prac site it became clear that a majority of class had also enjoyed the activity [see students' evaluation of the session]. Unfortunately, a small party of the enthusiastic women's group had misunderstood the landmark I had given them, wandering off to plot the territory far beyond the boundary I had intended. This held up proceedings for the womens' group somewhat.

Students also enjoyed drawing the resource map from the sketches they had put together. However, the mens' group redeemed their late start by drawing a really detailed and easy-to-read map, trumping the rather bare effort of their women companions.

The way I structured the assignment was to allow each group to field the questions I put to them from Activity 21 and questions put to them by the other group, allowing long responses and some discussion around pertinent issues. Both the mens' and womens' group I thought did very well in the activity. A majority of group members engaged closely with the questions

and members supported each other, chipping in where appropriate. It was pleasing to observe how both groups had really worked hard at the task and had enjoyed the activity. Participants generally spoke animatedly about their findings and their experience of the activity.

Lesson 12 – Activity 22: Do a Transect Walk

While there was some interest shown in this activity and students no doubt apprehended the link between this activity and the previous Resource Mapping, at least half of them complained of fatigue, given they had been walking around the community all morning. Indeed, the transect walk was fairly arduous for some in unsuitable footware as we trekked a kilometre or more across some rough, steep terrain in the heat of the day. However, once again, the exercise of actually getting out there, on the land, on foot, to observe gave them a good taste of what this kind of work is all about. I have no doubt that some of the students are firmly convinced now that they will not pursue a career as a water harvesting extension person. It is quite sobering to observe how resistant some of these guys are to physical exertion outdoors.

As expected, both the activities took longer than I had hoped, with the result that we reached the end of the day before groups had had a chance to complete their transect diagrams. I had noticed that while some were putting good effort in to recording our discussions and observations at the stops, others were fooling around or refraining from writing so I insisted that each person make their individual diagrams and allowed them to complete these at home. These diagrams will be assessed for their degree of detail and a mark will be added to the assignment on resource mapping.

Lesson 12 - Activity: Identify sites for site assessment activity in Session 7

I urged students to take the final half hour to visit local homesteads and obtain permission from the owners to spend some hours the following week assessing their home gardens.

Student evaluation of the session

Students liked/found useful

- Transect walk was great – we got to learn first-hand the lay of the land, seeing it with our own eyes.
- Resource mapping was an eye-opener – by walking around to observe we got to see things we hadn't noticed before – things that are important to water harvesting, like the springs and spring protection structures at the top of the catchment.
- We enjoyed learning new things out of doors, like mapping and drawing maps and tables together.
- Enjoyed the spirit of collaboration and learning and supporting each other.
- The map and diagrams of what we observed is very useful because it helps us to remember and record what was experienced in the field – I learnt a lot.
- We enjoyed exploring the area and getting to meet local people.

Students didn't like

- Too much walking around in the sun
- Those that came late said that it had made it hard to catch up and understand what was going on.
- The three women who wandered beyond the boundary were frustrated – although they enjoyed the adventure it tired them out and held up the map-drawing of the group.

Students would change

- The part about not doing the practical aspect of engaging local people in the mapping and transect exercises. They felt it was odd to be conducting the activities without the input of the local people. While they admitted understanding that it was a practice for them and that the exercise was not leading to WHC interventions, they still said that they would prefer to work with the people rather than not.

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Facilitation Manual Facilitator evaluation of Session 7

Students

Today 11 out of 13 students attended class at the prac site.

Session 7 Evaluation

Lesson 13 – Activity: Plenary discussion: relevance of local vs outside knowledge; experience of and lessons from communal gardening

This activity was fairly straightforward, building on many discussions between myself and students since the beginning of the Technical module.

Lesson 13 – Activity: Illustration of site assessment with mindmapping

This activity proved very successful as students reported later and as also observed by me during the exercise. I had brought along an old whiteboard that I found discarded at the university. This was lain on the grass and the newsprint on top. The students then gathered around and as we discussed the sequence of site assessment, took turns to draw the steps and linking arrows with kokis. It was very participatory and allowed each student to have a turn as well as participate in the discussion while observing how the mindmap grew in front of them.

Lesson 14 – Activity: Site assessment

Most of the students had set up site assessment with local landowners on their way home the previous week so they set off to conduct their respective assessments. It was interesting to note how different groups took different lengths of time to conduct the assessment. The one group of men whom I expected to return early were the last to return to base. They were flushed from the walk up hill in the sun but also very excited – they had come across a Malawian practising WHC extensively and with some skill and experience at a local site. What then transpired was that this Mr Banda was fascinated by the soil testing technique that the students went on to conduct in his presence as he had not seen this before. The result was a fine example of mutual learning as students felt enriched by their interaction with such an accomplished gardener while also feeling boosted by being able to share some of the knowledge that they had acquired on the course.

The other students clearly enjoyed the activity which they found enabled them to put into practice what they had been building towards in previous sessions – they found it a useful challenge and were excited that it felt real – assessing a real site for its WHC potential and then helping the owner to plan WHC interventions.

Students' evaluation

Students liked/found useful

- The students that found the old Malawian guy tending the extensive gardens of the wealthy undertaker said they were overjoyed to discover so many of the WHC methods they had learned being practiced in the community by people who had never attended WHC classes – they found fertility pits with bananas, a greywater system feeding a rice paddy, swales, mulching, intensive fruit and vegetable production, storage tanks and pumps.

- The mindmapping exercise students said really helped them to map out a process and understand a plan of action to be carried out – which then made it easy to implement according to the process set out in the manual.

- Because they were working on people's plots they were engaging with the owners around WHC methods and issues which many students said they found exciting and interesting – it was a good experience.

- A group of students said that they had come to understand the importance of consulting openly with site owners, of avoiding raising expectations.

- Mr Banda, the Malawian had showed a great interest in the soil test that students conducted on site and students said that they had found it very empowering to be able to share with such an accomplished gardener, something that they had learned about soils.

- The womens' group said that they had accomplished some crucial gender sensitising on their site where the resident man had been truly astonished to observe women assessing, planning and advising on issues of WHC.

Students didn't like

- A group of students said they found it very tricky calculating calculating the surface area of the rondavels on their site as they hadn't understood the formulae.

- A number of students said that they found the dogs unnerving.

- One group admitted that they had misunderstood the instructions from the previous week and had thus inadvertently raised the expectations of the site owner by telling him that they were coming to implement WHC methods and plant. However they were able to effect damage control and by the end of the activity the owner had felt compensated – having being left with a thorough assessment of the WHC potential of his site as well as a detailed plan for implementation.

Students would change

- Students said to report that they were "totally happy' with the structure of this session and the activity

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Facilitation Manual Facilitator evaluation of Session 8

Students

Today 11 out of 13 students attended class at the prac site.

Session 8 Evaluation

Lesson 13: Feedback on assignments, collect assignments, admin

This activity took longer than expected as it was combined with discussions about portfolios and assessment generally. I get concerned about the small group of young men and a few women who habitually come late as they miss so much. Feedback is a critical component of engagement with students especially these most of whom have had disadvantaged educational experiences. It's tricky to wait for the end of the day to give these sessions, figuring that all who were going to come have made it, because often students start to trickle off towards the end of the day and activities take longer than planned. This means it becomes a race to finish at the end of the day with feedback on assignments and participation, general discussions around content knowledge, etc become too easily lost. While one knows we are stressing the late-comers by this practice, at the end of the day they are a minority and tend to be the ones dragging their academic feet. Of course pastoral care helps facilitators to stay in touch with the personal conditions of their students.

Lesson 15 -Activity: Review PTID stages and Intro to M & E;

I put up an OHP slide of the PTID stages represented diagramatically and encouraged students to spot linkages with practical work we have been doing. We chatted about monitoring and evaluation as a systematic way of observing and reflecting – outlining 7 steps of PIM.

Lesson 15 – Activity: Input & discussion – [i] What to observe?

We had a discussion about I gave students an incomplete copy of table 6.1 and we worked through filling it in as we went as a way of understanding fears and expectations.

Lesson 15 – Activity: Input & discussion – [ii] How to measure?

I followed much the same format as the previous activity + students completed tables 6.2 & 6.3 in plenary.

Lesson 15 – Activity: input & discussion: Measuring indicators

Another lecture and discussion on Ways of measuring indicators + students completed table 6.4 with me. By this time I was realising that I should have taken more time and maybe got students to do the activities themselves in small groups. I generally find it challenging finding the right balance between fitting everything in by the end of the day and going slower to deepen learning through more meticulous processes.

Lesson 16 – Activity: Groupwork - Indicators and criteria

I tried to shift my plan for the session to be more small-group centred but we ran out of time quite quickly and I moved on perhaps before most students were on board with indicators and criteria (Tables 6.5 & 6.6.). I would like to have planned to spend more time with students going through the tables with them.

Lesson 16 – Activity: input & discussion - Record-keeping & [iii] Who should do it?

I ran through this session fairly quickly and easily, still using the newsprint posters as a referral point through the mini-lecture. Students responded well to the mini-lecture instruction interjected by critical questioning structure of the lesson.

Lesson 16 – Activity: input & discussion – [iv] When & how often, and Evaluation [v] What does it mean? [vi] What action? & [vii] Assess the system

This lesson was, in effect, not separate from the previous activity and continued using the same structure of mini-lecture with short plenary discussions. I would have preferred to have had more time however, for all of these activities and created more space for students to have worked on problems relating to the content I was teaching them. Ideally, they would also be able to do some practical facilitation of these activities in a real context.

Lesson 17 – Introduce Activity 24 and set for homework

This is an activity I would definitely include in a summative assessment portfolio in future, and as I was going over it with students in class I regretted not having included it. I think it's an important exercise that really helps students to reflect on what they've learned during both modules and to apply their minds to planning for future action on the basis of this learning and experience. This is an area where students at this level tend to struggle with. Assessment of this activity would also give lecturers/module facilitators quite a good idea of how well students have grasped both the technical and facilitation components of the course as a whole. I would recommend that future offerings make time for the module facilitator to guide students through the activity before setting it for summative assessment.

Students' evaluation

Due to having to divert my attention to urgent admin at the end of the day I encouraged a student to volunteer to take this on. Sabelo Mkhize obliged and it is his newsprint of the evaluation he conducted which I use in this section. It occurred to me that I could have been encouraging students to do this a while back to give them facilitation and evaluation practice. I must say I was a little taken aback by these rave reviews of (albeit animated) lecturing. However, it helped me realise that of course there is a place for poster diagrams accompanied by short discourses on and critical questioning around the content. Sometimes we are so focused on the participatory and forget the power of direct instruction in a conducive environment

Students liked/found useful

- The facilitator used big pieces of newsprint to talk about the PIM steps from the manual which we found very useful "because it was clear and easy to understand".
- We learned different ways to measure and we learned about how to monitor WHC using indicators – I enjoyed this because I think it is possible to implement in the future. The examples the facilitator gave us on how to measure helped to make it clear to us.
- I enjoyed the way monitoring and evaluation was broken down like tgat because it made it easy to understand.
- We had so much explanation which helped us.
- The tables for measuring fears and expectations made it easy to understand

Students didn't like

- People were leaving early and disturbing the class.

Students would change

- We would like to do these exercises practically in the community next time.

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Facilitation Manual Facilitator evaluation of Session 9

Students

Today 10 out of 13 students attended class at the university.

Session 9 Evaluation

Scoring and Ranking

This was definitely one of the highlights of the facilitation module. I found some great examples of matrices from and old Farmer Support Group manual on PRA which I photocopied for students and which I got them to study and discuss for about half an hour in groups before we had a plenary discussion and some input from me using the manual and the photocopies as an aid. The diagrams in the manual could not really be used as they were too small and lacked visual clarity.

I then handed out two sets of simple blank matrices which I had prepared [see appendix to this report]. They completed the matrices again in small groups, followed by a discussion on the process. Students quickly grasped the concept had then had a lot of fun making up their own matrices. This was hugely successful and a great way for students to grasp the concept. Students came up with matrices for scoring and ranking:

- Various brands of cellphones;
- Teams competing in the Fifa World Cup;
- Various models of car;
- National and international hip hop and R & B artists.

Brainstorming

We worked very quickly through the section on Brainstorming as students had been exposed to brainstorming snap evaluations at the end of each session throughout both modules. AS the session started late and had been shortened additionally because of various admin and logistical issues we unfortunately did not get time for different learners to facilitate a brainstorm, or let them have turns in smaller groups.

Reports

Again, as time was running out and I really wanted to devote more time to an evaluation of the module than we had done for the first module, I simply read briefly the main points of reporting as contained in the manual and urged students to make use of the suggested framework during their Service-learning modules in the second semester.

Appendix 5

Feedback from Students and External Examiner

Water Harvesting and Conservation

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Module Evaluation - Technical Manual

Tim Houghton, Module Coordinator

2 April 2010

Introduction

Ideally, this evaluation of the module by students would have taken place in class session with facilitation in order for students' responses to be more fully probed and clarity sought on various responses. However, due to circumstances beyond the coordinator's control, this was not possible and the five-page module evaluation sheet was given to students to complete at home.

The external evaluator's process will supplement this report, but I would like to recommend that this student evaluation can be extended and deepened by creating a session dedicated to this purpose. However, this report, based on evaluation submissions of 7 of the 14 students provides a useful interim overview of how the module and materials were received by the students.

What did you like most about the module?

Students reported enjoying working in groups, working outside, away from campus and learning interesting water harvesting and conservation methods and facts. They also commended the facilitator for being approachable and found the field visits enjoyable and informative.

What did you like least about the module?

Students generally found digging in the heat of the day and getting dirty the most onerous aspects of the experience. Two students had no complaints and one student also regretted leaving the bulk of assessment tasks til the last minute which created undue stress.

What parts of the module did you find most interesting/useful and why?

The 'why' part of this question was not answered adequately by a majority of the students who submitted.

Trench beds: improves soil fertility; planning water conservation

Ecosystems: because we are all living beings

Field trips: gaining knowledge and encouragement; seeing the practical application of WHC methods first hand;

Swales: learn how to save water;

Soil: How soil is formed; which soils suit which plants

WHC methods: We learn a lot

Furrows: learning the importance of channelling water;

Water and landscape: learning how the water cycle works

Fertility pits: because I would like to grow bananas;

Terrarium: because I can do it at home;

Planning: its good to plan before you do something

What three things would you change about the classes?

Two students did not answer this question and a few students did not come up with three suggestions. Some students suggested more field trips and more prac site work because thats where they learned a lot about practical application of WHC methods.

A number of students would not do the trench beds activity practically because its very hard work and most of them would hardly ever use or recommend this method. [This sentiment has been conveyed to me on a number of occasions informally too].

Some students wanted to have the prac site closer to campus, because of the extra travelling involved.

One student wanted more contact sessions ie twice a week and more work.

Some students believe the university should provide working clothes as they claimed their own clothes were becoming damaged by the physical labour.

A description of the facilitator who taught the module

Students were given a spread of 'positive' and 'negative' adjectives and asked to circle five words that best described the facilitator.

Good at explaining	4	Knowledgeable	5
Lively	1	Understands lives of ordinary people	4
Easy to talk to	6	Interesting	4
Well prepared	2	Sensitive	1
Willing to listen	3	OK	1
Interested in learners	3		

Handouts

Students were asked to tick boxes next to the sentences they agreed most with.

Most students said that they went over course materials again, especially those to do with assignments. One student went over all course materials again.

Three out of seven students found they understood course , materials but it was not very easy. Four students found the course materials very easy to understand.

Four students found the course materials very useful; two said there was quite a lot of useful information in the materials and one student did not answer the section.

Students were asked to make additional comments about materials.

One student requested a glossary in the margin. Another student said that it "gives us very useful information about farming" while another enjoyed having the all the materials in one manual which they got early and so it enabled him/her to study for the following session. One student said:

"It's beautiful and attractive".

Class activities

Students were asked to tick a box next to the sentence they most agreed with.

Three students said they could most of the activities in the time they were given, three said the time given was not adequate and one did not respond to the question.

Three students found the activities easy to do, two found the activities quite hard to do, one said they could not manage to do most of the activities and one student did not respond.

Five students found most of the activities interesting; two did not respond to the question.

Five students said they learned a lot from the activities; two did not respond.

Assessment

Students were again asked to tick a sentence they agreed most with. Two students did not respond to these questions.

Three students said the facilitator was fair in the comments that were given and fair in the marks allocated to the student's work.

Interestingly, two students were happy with the fairness of the comments, but unhappy about the marks allocated.

General

Only four of the students commented here:

"The course was very educational. The things we learned are not easy to forgot and we can use it in the future".

“It’s an interesting course and easy to understand if you follow all the information”.

“The WHC course was very useful because we would like to teach other people in rural areas about WHC”.

“I enjoyed the new strategy for assessment. It was very exciting”.

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Course Pilot UKZN Jan-May 2010

Module Evaluation – Facilitation Manual

Tim Houghton, Module Coordinator

21 June 2010

Introduction

In my module evaluation report for the Technical manual in April, I recommended that this student evaluation of the module be extended and deepened by creating a session dedicated to this purpose. To some extent I managed to do this for this evaluation of the Facilitation module, which took place during the class session with some facilitation in order for students' responses to be more fully probed and clarity sought on various responses; although the evaluation session was still not as structured and dedicated as I feel is ideal and there were some responses that lacked clarity and which I did pick up on until students had already left and so the meaning of these responses remain unclear.

Being the last session of the module, three students were absent, presumed to be working on their incomplete portfolios, and the day was interrupted to some extent with administration and logistics. However, this report, based on evaluation submissions of 10 of the 13 students provides a useful overview of how the module and materials were received by the students.

What did you like most about the module?

It seems that most students valued the opportunities to actually interact with community members and gain practical experience of facilitating WHC methods.

The opportunity to learn how to assess a site and produce action plans for WHC methods on sites also came through as being particularly useful: "I enjoyed interacting with the community members and getting experience in working with community".

Some students also reported enjoying the practical work on site as opposed to sitting a classroom : I enjoyed to do all the hard work on our site and I wish to get there again".

Students noted in their reports as well as to me personally that the opportunities to present to their peers and actually demonstrate how WHC methods are done were found to be really valuable. As I mention elsewhere in my reporting, it was clear that some students (especially those who seemed to battle somewhat with basic presentation skills)really excelled when they were able to demonstrate similar content with the aid of implements and artefacts.

A few students also mentioned the sessions on communication and conflict resolution skills as being useful.

What did you like least about the module?

Students overwhelmingly disliked being assessed on their self-assessment of their own review question answers, as well as having to do the review questions at all, which some students found unsatisfying: "all the answers were so easy to find in the manual and we didn't have to think".

One student said that nothing was wrong with the module.

Two students didn't like the hard work on the prac site, and a number of students felt that doing hard physical work in groups was challenging because some group members were lazy, putting stress on the hard workers.

Two students found it challenging to have to draw resource maps because they felt that their drawing skills were not up to standard.

What parts of the module did you find most interesting/useful and why?

Students almost unanimously found the following the following aspects of this module most interesting and useful:

- **Presenting and demonstrating** various WHC methods students found gave them valuable experience in explaining and showing others what WHC methods are and how they are used.
- **Facilitation of WHC methods through PTID** – students said helped them to think about *how* their knowledge of these methods can be shared with communities in a participatory way and also gave them confidence to be able to share what they know with others.
- **Resource mapping and transect walks** – students said that it was very useful to learn how to gather the information needed for assessment and planning and also to give an overview of the site they would be working with.

Some students also mentioned finding the sessions on internet research very useful because they had never been exposed to the internet before and it opened their eyes to a whole new world that they had only heard of before.

Other students mentioned the conflict management and communication skills sessions and a number of students said they found monitoring and evaluation particularly useful because it gave them skills to measure and understand what was and wasn't working in a project and correct where appropriate.

What three things would you change about the classes?

Not all students named three things they would change and didn't always give useful reasons as to why they would change these things. However, what stood out was that most students would have preferred to have had the course structured so as to have been able to see the results of their hard work on the prac site – the trench beds, swales, diversion furrows, fertility pits, etc that they put into the site were all done right at the end of the rainy season – as a result, no heavy rains fell once they were in place and so students never got to see how they worked which, understandably they found frustrating and unsatisfying.

Many students would also change the site to have it closer to the university classroom as this would have given us more time on site as well as enabled us to switch more easily between class and prac site.

A majority of students also would have done away with review questions for assessment as they said it took up a lot of time, did not challenge them much.

Many students also found that there were too few tools available to make work on the prac site comfortable – they said that the shortage of tools cause conflict as groups were working under time pressure – they suggested making more tool available during pacticals.

A description of the facilitator who taught the module

Students were given a spread of 'positive' and 'negative' adjectives and asked to circle five words that best described the facilitator.

Students made no negative comments about the facilitator.

Good at explaining	8	Knowledgeable	3
Lively	2	Understands lives of ordinary people	7
Easy to talk to	8	Interesting	3
Well prepared	5	OK	3
Willing to listen	8		
Interested in learners	2		

Handouts/Materials

Students were asked to tick boxes next to the sentences they agreed most with.

Students were asked to make additional comments about materials.

Question 7

No students said that they did not go over course materials again.

Six students said that they went over some of the course materials again, especially those to do with assignments.

Three students said that they went over all the course materials again.

One student said both that they went over some of the course materials again, especially those to do with assignments, as well as they went over all the course materials again.

Question 8

Five students said they found the course materials very easy to understand

Three students said that understood the course materials, but it was not very easy.

One students said both they found the course materials very easy to understand and that they understood the course materials, but it was not very easy.

One student said they found the course materials very easy to understand and that they understood the course materials, but it was not very easy AND that they found it hard to understand the course materials!

I presume that in the cases where more than one option was ticked that the student found sections of the materials varied in terms of how challenging the material was to understand.

Question 9

Four students said that they found the course materials very useful.

Four students said that there was quite a lot of useful information in the materials.

Two students said that they found the course materials very useful AND that there was quite a lot of useful information in the materials.

Student comments re materials

One student said that the course manual was difficult to understand sometimes.

A number of students suggested that as the manual was often used out of doors the cover should be colourful as well as protected by a plastic cover page.

A few students suggested that difficult and new words be explained in more detail in a textbox format in the margins of the page where they first appear.

One student wanted to be given more time to go through the materials at home.

Class activities

Students were asked to tick a box next to the sentence they most agreed with.

Question 11

Six students said that they managed to do most activities in the time they were given.

Four students said that they did not manage to complete activities in the time they were given.

Question 12

Only two students said that they found activities very easy to do.

Six students said that they found most of the activities quite hard to do.

One student said that they did not manage to do most of the activities (but added "alone" at the end of the sentence.

One student said that they found most activities very easy to do AND that they did not manage to do most of the activities.

Question 13

Six students said that they found most activities interesting.

Two students said that they found most activities OK.

Two students said that they found most activities interesting AND most of the activities OK.

No students said that they found most of the activities boring.

Question 14

Eight students said that they learned a lot from the activities.

One student said that they learned a lot from the activities AND that they did not learn a lot but learned something.

One student said that they learned very little from the activities [however this same student said under general comments that "this course is very useful", suggesting that he/she perhaps misdirected the question 14 response].

Assessment

Students were again asked to tick a sentence they agreed most with and to give reasons if they ticked a 'NO' response.

Eight students said that they thought the facilitator was fair in the things that he said about their work and that he was fair in the marks that he allocated.

One student said that the facilitator was fair in the things he said about their work but felt that he was unfair in the marks allocated. This student felt that they deserved better marks and that the facilitator should have given a better explanation as to where the student went wrong.

One student thought that the facilitator was unfair in the things he said about their work, saying that the facilitator "he was very strictly". However the student thought that the marks allocated were fair.

General

There was an overwhelmingly positive response from students under **general comments.** Students found the course "very useful", "fantastic", "should be extended to other institutions", "should be translated into local languages"; "especially useful for people in rural areas".

Many of the comments from the foregoing evaluation questions were repeated. In particular, students suggested that the technical module take place at a time of the year when it would be possible to witness the impact of their implemented WHC methods on the land during heavy rains. Students also asked for more time to do practical work saying that at times the practicals seemed a bit rushed. They also wanted more real interaction with the community while doing the facilitation module. Many students commented on how much they had enjoyed even the limited community interactions. Students emphasised the importance of finding a site closer to campus as this they felt would be more convenient for everyone and give more time. Again they suggested that review questions not be used for examination.

Some students felt that more time could be made for them to practice the presentation and demonstration of WHC methods as this gave them practice in conveying and sharing their knowledge with people and thus gave them confidence as facilitators of WHC.

Internal Examiner's Report

Name of qualification: ***Certificate in Education (Participatory Development)***
Module name: **Water Management for Household Farming Systems**
Module Code: **EDAE 140**
Credit: ***16***
Year: ***2009***
Semester: ***1***
Session: ***Normal***
Module Co-ordinator: ***Tim Houghton***
External Examiner: ***Bheka Memela***

A total of 14 out of an original 15 registered students completed this module. One student withdrew after his employer refused to allow him time off for his studies.

The module consisted of 9 six and a half hour classes, most of which were conducted at the prac site at KwaMyandu in upper Edendale.

Final assessment marks are made up of:

- 60% year mark from 4 assignments which each carried equal weight (see assessment schedule doc). The first assignment was a written research task, the other three consisting of on-site practical activities, combining a group mark with an individual mark, and a written report on the activity.
- 40% examination mark, 100% of which consisted of a portfolio submission (see assessment schedule doc). 70% of this portfolio mark consisted of assessment of students' ability to self-reflect on sets of review questions from the manual, using model answers provided to them.

Comments on the module on the basis of assignments, examinations and student evaluations

This group of students seem generally to have underdeveloped interview and reporting skills. Generally their reporting on interviews they personally conducted indicated that perhaps they had misunderstood questions/concepts to some extent or failed to ask the questions accurately or failed to report accurately. At times it may have been a combination of all three factors.

Overall I would say that about half of the students did not adequately grasp the mathematical concepts and activities we covered in class and on site. Specifically, I was concerned that by the end of the module many students do not fully understand the concept of "average" or "mean", are not able to adequately measure slope, calculate roof surface areas and runoff, not able to work with maps.

Generally students were poor at comparing two different sets of data (for example, their collected data with data from the maps with which they were provided. However, this academic skill is a common challenge for students with Bantu education backgrounds.

Reflections on conducting activities, was also generally quite poor. Responses tended to be very shallow and lacking in critical reflection.

I was generally very pleased with the way students conducted practicals (of which there were many) as well as practical assignments. Students worked enthusiastically at the

prac site and easily grasped the practical applications of water harvesting methods. Students were also required to orally present their reflections and understandings of the prac work – this I thought they did well. Particularly interesting was how much better some students did at demonstrations where they had tools, implements and the results of prac work to discuss, compared to simple oral presentations without "props".

Students reflections on the module
Students reported enjoying working in groups, working outside, away from campus and learning interesting water harvesting and conservation methods and facts. They also commended the facilitator for being approachable and found the field visits enjoyable and informative.

Students generally found digging in the heat of the day and getting dirty the most onerous aspects of the experience. Two students had no complaints and one student also regretted leaving the bulk of assessment tasks til the last minute which created undue stress.

Some students suggested more field trips and more prac site work because that's where they learned a lot about practical application of WHC methods.
Some students wanted to have the prac site closer to campus, because of the extra travelling involved.

Recommendations
Students will need some encouragement and support and have to put a lot more effort into critical reflection during their service-learning modules in the second semester.

Some way needs to be found to increase the number of field trips as time did not allow for us to make the recommended number of field trips.

An assessment review process to look at whether the self-reflection on review questions from the manual is the most appropriate form of summative assessment. This issue will be taken up with the course designers during a thorough course review process during the second semester.

Certificate Task team needs to standardise external examination criteria and report forms.

Centre for Adult Education

University of KwaZulu-Natal (UKZN)

External examining of Certificate in Education Participatory Development – Water Harvesting and Conservation (EDAE 141)

Course Name:	Water Harvesting & Conservation/ Water Management for Household Farming Systems	Course code:	EDAE 141
Examiner/s:	Tim Houghton	Tel: 033-2605835	082-5699227

Month & year of examination:	June 2010		
Type of examination	Portfolio Assessment	Length:	7 sets of review questions & 3 reports

Background to module

This module is the Facilitation component of WHC and follows on from the previous module which focused on technical aspects of water harvesting and conservation, such as background to national and international water issues, legislation and the application of various methods.

This facilitation module largely focuses on PTID (Participatory Technology and Innovation Development) and PIM (Participatory Impact Monitoring) processes.

Students

During the semester one of the 14 registered students withdrew due to finding work in another city. Twelve of the 13 registered students submitted portfolios for exam assessment.

With a few exceptions, students did alright in terms of submission of assignments throughout the course of the module delivery and no student had their DP refused. However, one or two students continued to drag their feet, submitted assignments late, etc.

Kheswa, V. [**209536713**] did not submit a portfolio. He has generally performed poorly throughout the semester and failed to hand in two assignments, despite being given extensions.

Gumede, B. L. [209539869] is a weak academic who battles to stay on top of his work and produce work of the required standard. I failed him in the first module, but the external felt that my marking had been too strict and recommended a pass. As I anticipated, he scraped through the portfolio and got through the semester fairly OK - at times riding on groupwork

marks but, significantly, he achieved a remarkable first class mark for his assignment 4 which was a report and reflection on a practical site assessment which he conducted extremely thoroughly and in great detail. Despite the good last mark however, it is likely that he will really struggle with DIP and will need close supervision and encouragement.

Ngobese, P. T. [209536696] is a student who has not applied himself to his studies in this module. I suspected that he would also scrape through the semester, however, he submitted assignments of a very poor standard – he failed most and then, despite receiving significant extra attention from me re: submission of portfolio, he failed that as well – due to his failure to put in the required work.

Bonani Mnikathi [209536700] was absent on the last day of class before submission of portfolios and therefore became confused about submission dates and had to rush through the final stages of his portfolio. As a result, I failed his portfolio which was incomplete. He qualified for a supplementary assessment which he passed.

The following student is recommended for Certificate of Merit:

Structure of portfolio assessment

The bulk of the portfolio assessment [70%] consisted of Review Questions. In the manual, each chapter (1-7) concludes with a set of Review Questions aimed at testing students' content knowledge of the chapter. Students were required to submit all 7 completed Review Questions for the portfolio. The idea here was for students to complete the activities on their own and then submit each set of questions to me during the course of the semester. On submission, I then returned the submissions unmarked, accompanied by model answers for each set of questions. Students were then required to mark their own work ie: allocate marks for each section and provide detailed comments: inserting information that had been left out, correcting wrongly answered questions, reflecting on their own performance, etc, guided by the model answers .

I allocated 10 marks for each set of review questions reasonably completed and marked.

Students were required to submit three reports for their portfolios: the first two reports on practical activities done in class or at the site, carried 5 marks each, while the third was a three page reflection on the module and carried 10 marks.

I allocated 10 marks for structure and presentation.

Module marks allocation:

Assignments 1-4 each carried equal weight of 25% of the year/class mark.

The class mark constituted 60% and the portfolio 40% of the final mark.

Comments on portfolio assessment

I am rethinking the way the portfolio is structured. My idea with the review questions was to strongly encourage students to engage as fully with the manual content as possible. Their marks come from self-reviewing each set of review questions (see assessment criteria and rubric attached). However, in some cases, students who were very diligent in their completion of the review questions, found very little to comment on and little in the way of additional information to add from the model answers they were given for purposes of self-review. I therefore became uncomfortable marking students down for not commenting and correcting sufficiently, as there was not much to correct! I therefore took a decision to not penalise students in this category and, departing from the assessment criteria, I gave them the benefit of the doubt and passed those questions that deserved it. Where there were opportunities to insert missing information that were ignored, I penalised accordingly. However, I am not entirely satisfied that this flexibility was applied to all students equally. I asked the external examiner to comment on this issue.

My second concern with the review questions is that they require very little critical engagement with the text and encourage students to copy answers directly from the manual text. I have not penalised them for this but I am concerned that it fosters the bad habit of plagiarism in these undergrad students.

With *Report 1: the Meatrix*, where students reported on a short movie they had seen, there seemed to be some confusion as to what was required – some students simply submitted the report, believing that was all that was required, while others did the activity and self-reflected as I stipulated in the assessment criteria. I put this down to conversations we had in class about the activity that must have led to the confusion – I must take blame for the confusion and therefore, where students self-reviewed, I marked according to the criteria I set, and where they simply submitted the report, I marked the report on its academic merit, according to the questions which were set for the activity.

Recommendations

A question which begs discussion is: is it fair to adjust down quite significantly the marks of six students who were externally assessed, while leaving the other marks as is? I think we may want to discuss the issue of a formula for adjusting marks on the basis of comments from an external examiner in a certificate meeting.

An assessment review process to look at whether the self-reflection on review questions from the manual is the most appropriate form of summative assessment. This issue will be taken up with the course designers during a thorough course review process during the second semester.

Certificate Task team needs to standardise external examination criteria and report forms.

Tim Houghton

*10 June 2010

Appendix 6

Interview Transcripts with Agricultural College Respondents

Date	13 October 2010	
College Name	Cedara Agricultural College	
Person	Bernd Lutge	
Position	Vice-principal	Initial contact made with Bernd, who set up interview with Rob and Johan
Person	Rob Ainslee	Interviewed
Position	Agricultural Civil Engineer, Lecturer, BAgric Man and Agric Diploma	
Person	Johan van Veenendal	Interviewed
Position	Agricultural Scientist, BAgric Man and Agric Diploma	
Person	Dr Harry Swatson	Unavailable on the day – phone interview evening of 13th
Position	Head of Cedara College FET section	
Interviewer	Tim Houghton	

Did you receive the WH&C materials ?	YES
What is your comment on the value of the usefulness of the WHC guides as far as your college is concerned ?	*Extremely interesting and valuable for students and the college as a whole.*
Do you offer the Certificate in Agricultural Extension ?	*No, this course has been discontinued due to the fact that the National Department insists that every extension officer have a minimum degree qualification*
Are you likely to use the RWH draft manuals as <u>reference material</u> in your existing courses ?	*Yes! Very interested in receiving final version of materials in electronic format to be included in student reading lists and for reference purposes in library. Also to incorporate some of the content into various HE modules/offerings on BAgric as well as Agric Diplom. Would be useful in modules such as:* • *Resource Conservation* • *Hydraulics and Water Provision* • *Vegetable Production*

	• *Various soils modules* • *Irrigation* • *Farm construction*
Are you likely to use the RWH draft materials as a short course or skills programme?	1. *These WH&C modules would be especially useful in the third and more practical year of both Cedara HE qualifications where students are offered short course options. Students here would be fulltime students registered for the BAgric Man and the Diploma in Agriculture* 2. *The content would also be useful to develop into short course offerings in the FET section of the College. Students would be government extension officers, commercial and emerging farmers, subsistence households, rural schools. They see 2 distinct short courses [Technical and Facilitation] that may be offered together or stand alone. They recommend reducing the amount of content and degree of complexity of existing manuals to suit FET end-users.*
Do you have capacity to review your existing curricula and see how the RWH materials can be included ?	*The incorporation into the HE offerings could be done with existing capacity. If FET section bought into the short course option, they would benefit from an induction and training programme on manuals and methodology. Lecturers in the HE section may also like to participate in training if the College were to offer 3rd year HET students the WHC short courses.*
Any other comments ?	• *The future of Cedara short courses is tenuous due to funding and resource demand and staff cuts.* • *Consider including something on vetiver grass and the "Greywater Wheel" that*

	earlier versions of WRC manuals covered.
Curricula request – can you send us a prospectus ?	*Electronic version of prospectus has been requested*

Date	27 September 2010
College Name	Elsenburg Agricultural College
Person	Maritjie Zona Lord Yvonne Mashyane
Position	FET Section (Douglas Chitepo is Head)
Interviewer	Jonathan Denison

Did you receive the WHC materials ?	YES
What is your comment on the value of the usefulness of the WHC guides as far as your college is concerned?	Very useful materials for content that can be used in short courses at all levels.
Do you offer the Certificate in Agricultural Extension ?	NO
Are you likely to use the RHW draft manuals as reference material in your existing courses?	YES these include: Permaculture – Elective in National Certificate for Plant Production (up to NQF level 4) Modules - Soil Fertility and Plant Feeding Modules - Integrated Farm Layout and Site Layout Module – Operation and Maintenance of Irrigation Module – Sustainable Farming Systems Module – Inputs and stock in agribusiness
Are you likely to use the RWH draft materials as a short course or skills programme?	YES, we run both and would be keen to include this as either a skills programme or short course. The short course application would be particularly relevant.

Do you have capacity to review your existing curricula and see how the RWH materials can be included?	No we don't have capacity as staff are overstretched and this is an important aspect of the work which we address with little support. We get direction on what short-courses are needed from the Western Cape Department of Agriculture - Farmer Support and Development (FSD) Sub-programme, headed by Jerry Aries. It is their responsibility to assess the needs of farmers and then communicate with Elsenburg FET section about what courses are needed to address farmers' needs. This interaction is meant to become the basis for adjusting curricula and making it relevant for future users. There is, however, a gap in assessing the real needs and also the actual development of responsive curricula that meet the needs of small farmers within the FET programme. There is an urgent need for a more formalised process to achieve a more responsive curricula design.
Any other comments ?	Elsenburg has been working well with Boland FET college in regard to animal production content and WHC could be included in courses there. This course on WH&C would benefit greatly from a focussed TOT training that should be conducted at the colleges – for future lecturers who are going to conduct WH&C courses. Ideally, the TOT course should be condensed into 3 days – and aims to upskills lecturers to on the content and course process, and provide direction on how they might practically teach the course. It may be useful to get guidance or examples from the South African Institute of Entrepeneurs. They have a website and offer support with course development and are very useful in relation to short courses. In particular they have good visual images – they are based in Observatory, Cape Town.
Curricula / Prospectus request	Internet download

Date	16 September 2010
College Name	Fort Cox College (Alice)
Person	Mr Araia
Position	College Head
Interviewer	Jonathan Denison

Did you receive the RWH materials ?	YES
What is your comment on the value of the usefulness of the guides as far as your college is concerned ?	I have studied the materials and know a lot about WHC. The materials are very good and very useful.
Are you likely to use the RHW draft manuals as reference material in your existing courses ?	YES – we run a Water Resources course and a land rehabilitation / conservation course and the materials will be very useful to include into these.
Are you likely to use the RWH draft materials as a short course or skills programme?	YES, we run Skills Programmes and also do inservice training and would be keen to run the whole course as a package.
Are you aware that SAQA is terminating skills programmes and will only be allowing short courses to be run in future.	NO
Do you have capacity to review your existing curricula and see how the RWH materials can be included ?	NO – we don't have the capacity and would appreciated assistance.
Any other comments ?	Can you please come and make a presentation to our staff and students on RWH and the materials package to introduce them to it.
Curricula request	Will send by e-mail.

Date	16 September 2010
College Name	Glen College (Bloemfontein)
Person	Mr Snyman
Position	College Head
Interviewer	Jonathan Denison

Did you receive the RWH materials ?	YES
What is your comment on the value of the guides as far as your college is concerned ?	While I am not a technical RWH specialist, the content looks very good and will be useful for the some of the courses that are run.
Are you likely to use the RHW draft manuals as reference material in your existing courses ?	YES – definitely, will be valuable to take extracts and include in the Agricultural Certificate - crop production and the Agricultural Certificate – animal production.
Are you likely to use the RWH draft materials as a short course or skills programme?	YES, so long as these are accredited.
Are you aware that SAQA is terminating skills programmes and will only be allowing short courses to be run in future.	NO
Do you have capacity to review your existing curricula and see how the RWH materials can be included ?	NO – this as a serious problem and assistance is needed.
Any other comments ?	We are short staffed and don't have the resources to do this type of thing but water conservation is an important aspect for the future.
Curricula request	Will send by e-mail

Date	17 September 2010
College Name	Grootfontein Agricultural College
Person	Mr Strydom Schoonraad
Position	College Head
Interviewer	Jonathan Denison

Did you receive the WHC materials ?	YES
What is your comment on the value of the usefulness of the WHC guides as far as your college is concerned ?	I skimmed them and handed them over to someone else. The feedback is that they are good and useful.
Do you offer the Certificate in Agricultural Extension ?	NO
Are you likely to use the RHW draft manuals as reference material in your existing courses ?	YES – we run a number of diploma level courses and will hope to include the WHC content into our existing curricula. Our main emphasis is on small livestock production in the Karoo and arid areas. Therefore WHC is a very important element and we need to include this in our curricula.
Are you likely to use the RWH draft materials as a short course or skills programme?	YES, we run both and would be keen to include this as either a skills programme or short course.
Do you have capacity to review your existing curricula and see how the RWH materials can be included ?	NO - We have a crisis in capacity. Our lecturing position on water management and irrigation has been vacant for 2 years, so we use consultants to lecture.
Any other comments ?	Any support that can be obtained from the Water Research Commission or National Agriculture to include WHC into the curricula is much needed.
Curricula request	Will send by post.

Date	4 October 2010
College Name	Lowveld Agricultural College
Person	Dr Peter Reed
Position	Acting Head of Student Affairs
Interviewer	Jonathan Denison

Did you receive the WHC materials ?	YES
What is your comment on the value of the usefulness of the WHC guides as far as your college is concerned ?	Definitely useful for the courses we offer. Water conservation is a critical national issue and it is good that it is high the agenda of WRC.
Do you offer the Certificate in Agricultural Extension ?	No.
Are you likely to use the RHW draft manuals as reference material in your existing courses ?	Yes – we run courses where water is a central focus and would be keen to bring WH&C into the curricula. Your materials would be useful to do that.
Are you likely to use the RWH draft materials as a short course or skills programme?	Yes – although budget is increasingly limited to run short courses, this would be a short course that we are interested in.
Do you have capacity to review your existing curricula and see how the RWH materials can be included ?	The situation at the college is in a state of general disarray. At the moment we have strikes and at the moment I am threatened with suspension. We are in a state of crisis management and are unable to give advanced curricula planning the attention that it deserves.
Any other comments ?	Water Research Commission and Dr Backeberg have always produced good work and we are pleased to see new interventions like this coming out of the WRC. This is good for the future.
Curricula request	By mail.

Date	4 October 2010
College Name	Potchefstroom Agricultural College
Person	Mr Richard Serage
Position	Head of College
Interviewer	Jonathan Denison

Did you receive the WHC materials ? Did you receive the covering letter ?	YES – but we thought they were misdirected as we didn't know why they were sent. YES we did receive the covering letter which explained why they were sent but it didn't apply to us – we thought it was misdirected.
What is your comment on the value of the usefulness of the WHC guides as far as your college is concerned ?	We didn't see much usefulness in including this in the HET courses as there wasn't much in the manuals at the NQF level we need, which is NQF 6 and above. However for FET applications at Taung College, who are a sister college, this might be useful.
Do you offer the Certificate in Agricultural Extension ?	NO
Are you likely to use the RHW draft manuals as reference material in your existing courses ?	Yes, it might be useful as reference material for the FET training courses at Taung.
Are you likely to use the RWH draft materials as a short course or skills programme?	Maybe – our people at Taung will see if there is a need expressed by farmers; then we will structure a short course using the materials.
Do you have capacity to review your existing curricula and see how the RWH materials can be included ?	There is an urgent need for irrigation, water management, RWH input to the curricula generally. There are very few technical people who have the expertise to address curricula restructuring and updating in this knowledge area.
Any other comments ?	None.
Curricula request	By mail

Appendix 7

Outline of an Introductory Course for Facilitators on the Comprehensive WH&C Learning Package

Draft Outline of a 3 Day Training Course for Future Facilitators of the Comprehensive Learning Package for Water Harvesting and Conservation

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This draft 3 day course sets out a structure for training lecturers/facilitators Agricultural Colleges and other AgriSETA approved training institutions.

Assumptions:

- ✓ facilitators / lecturers have minimal experience in relation to WH&C and to experiential learning methods
- ✓ we are training trainers
- ✓ energisers are used to revive participants participation when needed
- ✓ flexibility: the delivery time and structure of this workshop will vary according to the number participants; ie: smaller group will take less time because of the practical nature of activities
- ✓ the group has access to a potential/actual delivery site for physically conducting the TechMan practicals on site during this workshop
- ✓ trainer carries a mini course kit with some basic tools [list to be compiled, basically couple of sticks, a line level, string, rulers and tape measure, etc]
- ✓ host supplies larger tools such as spades, hoes, etc

Day 1: Introducing content and methodology; preparation for practicals			
Activity	**Time**	**Methods**	**Notes**
Introductions and expectations	30 mins	Ice-breaker and roundtables;	
Agenda review	10 mins	Snap presentation	
Boundary agreement	10 mins	Brainstorm	Group agreements around working together during the workshop
Introduction to manuals and course; purpose and methodologies	30 mins	Presentation and plenary discussion	
TOT vs. Participatory methodologies	1 hr	Debate	
	BREAK		
Activity from manual	1 hr	Participatory activity from manual; plenary debriefing	Trainer conducts one of the activities from the facilitator manual as demo and debriefs
Present manual	1 hr	Lecture format with buzz groups; think-pair-share, etc	Trainer takes group through manuals one and 2
	BREAK		
Animators and academics Step 1-	1 hr	Simulation – using facilitated participatory drama and research technique.	Class is divided into two groups that are respectively assigned 2 different tasks, viz: "Animators" prepare activities from the manual for facilitation; "Academics" study relevant parts of the manual for inputs during coaching and mentorship sessions [days 2 and 3]
Animators and academics Step 2 –	1hr	facilitated participatory drama & research technique	Preparation continues; animators prepare activities & academics study manual
	BREAK		
Reflection on day	30 mins	Evaluation	
Planning rest of workshop	30 mins	facilitated Plenary roundtable	Workshop structure is in place but its important to encourage ownership of purpose and process
Closing	15 mins	Listening circle	Something I learned today...

Day 2 – Practical : practice of content delivery with coaching			
Activity	**Time**	**Methods**	**Notes**
Gathering	30 mins	Listening circle	Insights from day 1
Mini workshop presentation – "Animators"	1 hr	Participatory methods and/or demonstrations	Animators conduct activities from manual with group
Coaching session	30 mins	Participatory coaching & mentorship	Trainer & "academics" debrief activities with animators
	BREAK		
Mini workshop presentation – "Animators"	1 hr	Participatory methods and/or demonstrations	Animators conduct activities from manual with group
Coaching session	30 mins	Participatory coaching & mentorship	Trainer & "academics" debrief activities with animators
	BREAK		
Mini workshop presentation – "Animators"	1 hr	Participatory methods and/or demonstrations	Animators conduct activities from manual with group
Coaching session	30 mins	Participatory coaching & mentorship	Trainer & "academics" debrief activities with animators
Closing	10 mins		

Day 3....over page

Day 3: practical continued; planning implementation			
Activity	**Time**	**Methods**	**Notes**
Gathering	30 mins	Listening circle	Insights from day 2
Note that if the group is less than 8 participants then this session may fall away on day 3 and the workshop would end at tea break rather than lunch.			
Mini workshop presentation – "Animators"	1 hr	Participatory methods and/or demonstrations	Animators conduct activities from manual with group
Coaching session	30 mins	Participatory coaching & mentorship	Trainer & "academics" debrief activities with animators
	BREAK		
Way forward	1 hr	SWOT analysis/ ranking exercise	Critical analysis of institution and site capacity to deliver course/course; evaluation of opportunities and challenges
Planning for implementation	1 hr	Small groups followed by plenary	Basic setting of learning and practical objectives and drafting of basic educational monitoring tools
Evaluation of workshop	30 mins	Plenary brainstorm and brief discussions	
Closing	20 mins	Listening circle	Wrap of learnings and confirmation of way forward
	END		

Appendix 8

Knowledge Dissemination

Water Wheel Article
Natal Witness - Learn with Echo (selected)
Presentation to Network for Irrigation Research and Extension in South Africa (SARIA)

WRC water harvesting short course materials get the nod

Saaidamme is a form of rainwater harvesting that has been applied in South Africa for hundreds of years.

Courtesy Jonathan Denison

Water harvesting and conservation (WH&C) has gained increasing priority in rural development and agricultural initiatives over the last ten years in South Africa. The Water Research Commission (WRC) is developing an active role in developing the science of WH&C by targeting research grants to modernise, localise and quantify methods and their benefits. Words by Jonathan Denison.

The most recent contribution is the development of a comprehensive learning package on water harvesting and conservation, structured as a 30 credit short course, and which has received resounding approval from colleges and stakeholders nationally. The course is designed to be presented by AgriSETA accredited service providers and the Agricultural Colleges, among others. It aims to equip rural development fieldworkers and agricultural college graduates with both the technical and the facilitation skills to effectively take water harvesting and conservation technologies and approaches to farmers and home-gardeners.

Up to the late 1990s, WH&C was promoted mainly by non-governmental organisations working towards food security through improved gardening and crop-production methods. Trench beds, diversion furrows, swales, mulching and other techniques can be found around South Africa, usually, but not always at a small scale. Although still not widely known, WH&C has also been practiced at an impressive scale by commercial lucerne farmers of the arid Northern Cape who are dependent on thousands of hectares of 'saaidamme' or floodwater harvesting basins, to sustain their sheep production and the regional economy.

Even with these working systems at all scales and across cultural and income groups, the many different water harvesting and conservation techniques remained on the fringe of mainstream practice and policy until the last decade. However, this has changed and WH&C is now increasingly part of the common discourse by politicians and scientists alike. It is recently embedded in South African government policy and subsidy arrangements across departments, including the Department of Agriculture (in the National Five-Year Plan); the Department of Water Affairs (in the resource poor farmers subsidy); and the Department of Rural Development and Land Affairs (in the Green Paper), among others.

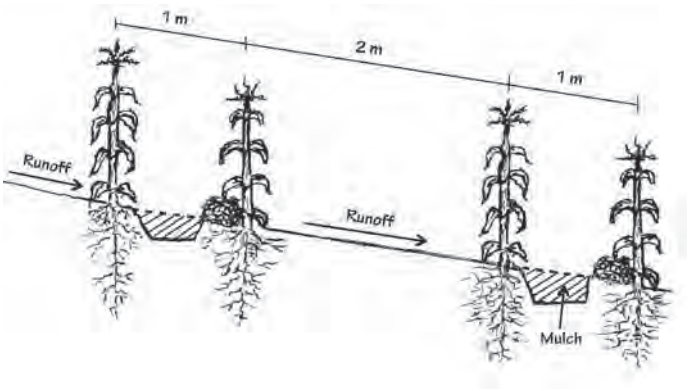
The value of water harvesting approaches are that they offer relatively low-cost interventions that can be implemented in stages as resources allow; and they have proven

outcomes of increased yield, reduced risk of crop failure and greater profitability. A scan of the WRC website for water harvesting publications provides convincing and credible evidence of the increased role that these approaches will have in securing food into the future.

The Comprehensive Learning Package on Water Harvesting and Conservation was developed over three years by the Umhlaba Consultig Group and collaborating researchers, artists and educationalists, including a piloting team at the University of KwaZulu-Natal. The materials were crafted following wide consultation with government departments and potential users, and responds to the Department of Agriculture requirements for Unit Standard compliance (Set at NQF 5). The materials, in their final form, are also compatible with the Quality Council for Trade and Occupations requirements for a Short Course; in this case comprising 30 credits.

The package comprises three main parts: Part 1 and 2 are geared to students of rural development and agricultural extension, while Part 3 is developed specifically for resource poor farmers and gardeners – who are the primary end-users of the learning package initiative.

The Technical Manual introduces the principles of water harvesting and conservation, the water cycle, soils, water and ecosystems. It then sets out detailed, step-by-step illustrated descriptions of how to implement the 13 different WH&C approaches that were selected as being most appropriate to the South Africa context.



The Facilitation Manual is based on contemporary participative research and extension thinking, consolidated in the 'Participatory Technology and Innovative Development' approach. The course challenges students to consider the concept of development, to identify and appreciate indigenous knowledge and sets out a sequence of interactions to ensure respectful and motivational engagement with a range of people. The approach is centred around the well known Kolb Cycle of action learning. The specific intention is to engender a paradigm shift in the way the course-graduates engage with gardeners and farmers, primarily by respecting their existing knowledge base, and promoting knowledge gain through joint experimentation, shared learning, self-monitoring and information sharing.

Farmer handouts are a fully illustrated, A4 size materials which can be left with farmers and gardeners. The black-and-white line drawings can readily be photocopied and left with farmers and villagers as reference materials to aid their implementation and experimentation with whatever methods are suitable to their context.

A recent survey of the Agricultural Colleges and other potential users who were circulated the draft materials, found widespread approval of the content, illustrations and educational approach. The vast majority of the Agricultural Colleges expressed substantial interest to use the materials both as resource material for existing courses, and are keen to offer a WH&C short course.

Two colleges have already started to embed content from the drafts in their 2011 coursework, unable to wait for the final print. One College Head who was interviewed said: "In the context of climate change and in our arid country, we must make sure that our students embrace these techniques. They are an unavoidable part of our agricultural future."

The guides will be available from the WRC in April. ❑

Learn with Echo (LwE) publication

Topics from the Technical module that were selected for inclusion in the Natal Witness Learn with Echo publication were:

- The Phiri Maseko story and the 8 principles of WHC
- SA water management & policy legislation linked to Human Rights
- Water pollution
- Soil erosion
- Ecosystems & sustainability through the story of Baba Maphumulo
- WHC Methods (including:

    A-frames/ line levels;

    Mulching

    Stone bunds & Swales

    Greywater & roofwater harvesting.

Each article in the series will flag the connection with the Water Research Commission.

Learn with Echo

http://cae.ukzn.ac.za/LWE.aspx

UNIVERSITY OF KWAZULU-NATAL

No. 990
November 18
2010

Write to:
Learn with Echo
Freepost KZN 330
Scottsville
3209
You don't need a stamp!

Produced by the Centre for Adult Education, UKZN Pmb. Telephone 033 - 260 5592

It is never too late to learn

Nan Carbarns came to South Africa from Scotland more than fifty years ago. She came to teach at a girls' school in Durban. She did not go back to Scotland. She married a South African man and went to live in a rural area between Donnybrook and Ixopo. Her husband encouraged her to learn to speak Zulu, and she did (Umyeni wakhe wamkhuthaza ukuthi afunde ukukhuluma isiZulu, nangempela wafunda). She speaks Zulu with a Scottish accent.

Nan enjoyed reading the stories about Mkhize. She missed them when they stopped. (UNan wayefunda izindaba zikaMkhize. Wayezikhumbula ngengathi zingasabhalwa.) When she saw *the stories of Macingwane in the paper she tried to read them,* but she could not. She decided it was time for her to learn to read Zulu. So she asked a man who works at Azalea Gardens, the retirement village where she lives, if he would help her read. The man she asked was Mr Ernest Mziwamadoda Maqashalala. He comes from Matatiele, and he lives in Dambuza.

Ernest said he would help Nan read Macingwane's story after work every Thursday. So now every Thursday they read the story of Macingwane together. Nan reads the story aloud and Ernest makes sure she says the Zulu words properly. He also explains the meaning of words that she does not know.

Maqashalala must be a very good teacher because Nan is reading Zulu better every week, and they are both enjoying the adventures of Macingwane. (UMaqashalala unguthisha oqavile ngoba izinga likaNan lokufunda isiZulu lithuthuka masonto onke, kanti bobabilili bathokozela loluhambo lwabo.)

Do you know any true stories like this, about people who learn or teach others? Is there someone you can teach, or learn from?

Izinkinga zamanzi emhlabeni wonke jikelele

Image: By Dexter Roberts, with Huang Zhe

The water crisis is world wide

One of the main reasons for our water crisis is the growing number of people in the world. Yes, there is the same amount of water now as there was years ago but there are many, many more people on earth, and they all need fresh water to keep living.

Right now people use fresh water for farming, for industry, and to supply people's needs in their towns and their homes. In many areas this water is used faster than it can be replaced.

As the number of people in the world keeps growing, the demand for fresh water also grows. We think that by 2025, forty-eight countries will not have enough water for their people. 2.8 billion people will not have enough fresh water. By 2032 places where more than half the people in the world live will be short of water.

Ukwanda kwesibalo sabantu emhlabeni, imbangela enkulu yokuntuleka kwamanzi. Yebo, inani lamanzi lisafana nasekuqaleni, inkinga ukwanda kwesibalo sabantu emhlabeni. Sonke sincike kulamanzi ukuze siphile.

Njengamanje abantu sisebenzisa kakhulu amanzi ezintweni ezinjengokulima, ezimbonini, komasipala kanye nasezidingweni zethu singa bantu. Ezindaweni eziningi amanzi asetshenziswa masishane, angatholi ithuba lokuqoqana futhi.

Njengoba inani labantu liqhubeka nokwanda, nokudingeka kwamanzi kuyakhula. Alinganiselwe ku 40 amazwe azontula amanzi ngonyaka ka 2025. Bangu 2.8 wezigidi ngezigidi zabantu abazobe bengenamanzi. Kanti ngonyaka ka 2032 ngaphezu kukahafu wabantu emhlabeni bazobe bentula amanzi ezindaweni zabo.

Activity

What can we do to use our water in a way that our great grand children can also find water on this earth? Write three ways you can think of.

_____

_____

_____

Umsebenzi

Ikuphi esingakwenza ukusebenzisa amanzi ngedlela yokuwongela izizukulwane zezizukulwane zethu? Bhala izindlela ezintathu zokonga amanzi.

_____

_____

_____

Next week: Addressing the water crisis is South Africa

Ngesonto elizayo: Ukuxazulula izinkinga zamanzi eMzansi Afrika

Learn with Echo

UNIVERSITY OF KWAZULU-NATAL

No. 995
January 20
2011

Write to:
Learn with Echo
Freepost KZN 330
Scottsville
3209
You don't need a stamp!

http://cae.ukzn.ac.za/LWE.aspx

Produced by the Centre for Adult Education, UKZN Pmb Telephone 033 - 260 5592

Izikole ziqola abazali abantulayo

Bangaki abafundi abasezikoleni okungakhokwa kuzo imali yesikole abaphoqwa ngokungemthetho ukukhokha imali yesikole?

Imfundo iyilungelo lethu sonke njengabantu baleli lizwe. Ibalulekile ekuthuthukiseni izingane ukuze zibe izakhamizi ezinentshisekelo emphakathini. Inkinga yezimali zesikole yenza kube nzima kwabampofu ukuba bathumele izingane esikoleni. Abazali abaningi abaqondi ukuthi isebenza kanjani inqubomgomo kahulumeni mayelana nezimali zesikole. Baningi abazali okungamele bakhokhe.

Uhulumeni wenze uhlelo lokubonelela abazali abangakwazi ukukhokhela izingane imali yesikole. Ngonyaka odlule kwakunezikole ezingu 19 933 eMzansi Afrika okungakhokwa kuzo. Okuchaza ukuthi nengane enabazali abadla imbuya ngothi, inelungelo lokwemukelwa esikoleni.

Abazali abantulayo kumele basukume beyobuza kothishanhloko nomabhalane ukuthi isikole sikhona yini ohleni lwezikole okungakhokwa kuzo imali yesikole ngo 2011. Uma sikhona abazali babhalise izingane zifunde. Othishomkhulu kanye nemikhandlu ephethe izikole kumele bazise abazali ngohlelo lokungakhokhi imali yesikole uma bengenayo.

Kumele izikole zilekelele abazali abantulayo ukugcwalisa amafomu okufaka izicelo zokungakhokhi imali yesikole. Izikole ezisohlwini lwezikole okungakhokwa kuzo imali yesikole azinalo ilungelo lokuphoqa abazali abangekwazi ukukhokha ukuthi bakhokha.

Abazali abanemali yokukhokhela imfundo yezingane zabo kumele bakhokhe imali yesikole. Uma ungumzali ongenayo imali yokukhokha, xoxisana nothisha nhloko ekuqaleni konyaka ngeqhaza ongalibamba ukuthuthukisa isikole sengane yakho.

Isikole sephula uthetho uma:

- √ senqaba ukwamukela izingane ezingekwazi ukukhokha,
- √ senqaba nefomu lokufaka isicelo sokungayikhokhi,
- √ singalinaki ifomu eligcwalisiwe lokufaka isicelo,
- √ sivimbela ukuhlolwa kwengane ngoba umzali engakhokhile,
- √ sixosha ingane uma umzali ehluleka ukukhokha,
- √ sincisha ingane izincwadi, ithukwe, ikhishwe inyumbazane,
- √ senqabe nemiphumela yengane engakhokhile.
- √ siphoqa ingane ukuba ithenge izincwadi. Uhulumeni uyazikhipha izincwadi! Kuphela nje kumele lezi zikole zifake izicelo sezincwadi kuhulumeni ngesikhathi esifanele.
- √ sixosha ingane ngoba ingenazo izingubo zesikole.

Qaphela! Kubalulekile ukuxoxisana nesikole mayelana nesimo sakho semali usabhalisa ingane, ukuze uthole ukwelekelelwa. Ungalindi isikole size sikufake kubameli.

Ulwazi, imininingwane noma ukwenza izikhalazo mayelana nezikole okungakhokwa kuzo, shayela:

UMnyango wezeMfunda kwaZulu-Natali ku **0860 536 363 noma 0800 204 353**. Noma uMnyango wezeMfundo kazwelonke ku **0800 202 933**. Noma ushayele abakwa Education Rights Project ku **011 717 3076** ukuthola usizo.

Ukumboza umhlabathi nezitshalo ngotshani kanye nezitshalo ezomile

Mulching

Mulching is a way of keeping water in the soil, so that plants always have enough water to grow well. Mulch is made with grass, straw, dry leaves, manure, or wood chips. You spread these things on top of the soil, around plants. Mulch is like a blanket over the top of the whole trench bed, which keeps the water in the soil.

Utshani kanye nezitshalo ezomile kuthelwa phezu kwezitshalo. Kwenzelwa ukulondoloza amanzi emhlabathini. Kuphinde kwenzelwe ukuthi izitshalo zihlale zinamanzi ukuze zikhule kahle. Lo tshani kanye nezitshalo kungabandakanya amaqabunga omile, umanyolo kanye nezicucu zezinkuni. Ufika ukwendlale phezu komhlabathi, nasezitshwalweni.

Why use mulch?

- √ Mulching saves water. It helps the water to go into the soil underneath. Then the mulch stops the water from coming out of the soil (evaporating) in hot dry weather.
- √ Mulching also protects the soil. It stops the soil from getting washed away. It also stops the soil getting hard in heavy rains.
- √ Mulching keeps the soil (and plant roots) at an even temperature (cool in hot weather, and warm enough when it is very cold).
- √ Mulching helps to stop weeds growing.
- √ As mulch gets old it rots slowly, and it gets like compost that is good for the plants and the soil.

How to make mulch

- √ You need about two wheelbarrows of mulch per square meter of garden.
- √ Collect cut grass, straw, dry leaves, manure and so on.
- √ Spread it carefully over the soil, around and between plants.
- √ Do not cover the plants or squash them with the mulch.

Kungani kubalulekile ukumboza izitshalo nomhlabathi?

- √ Ukumboza izitshalo ngotshani kanye nezitshalo kulondoloza amanzi. Kulekelela amanzi angene emhlabathini ungasheshi ukoma.
- √ Kuvikela umhlabathi. Kuvimbela ukuguguleka komhlabathi. Kuphinde kuvimbele nokuqina kwawo ngemuva kwemvula enkulu.
- √ Kupholisa inhlabathi, izitshalo, kanye nezimpande uma izulu lishisa ngokweqile.
- √ Kuvimbela ukumila kokhula.
- √ Uma lezi zitshalo ezimbozile sezomile zenza umqub odingwa izitshalo nomhlabathi.

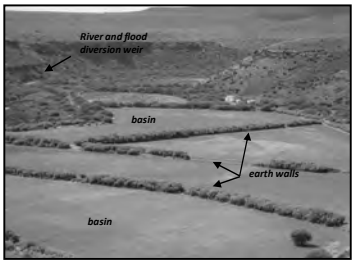
Imbozwa kanjani ingadi ngotshani nezitshalo ezomile?

- Isikwele esisodwa semitha engadini yakho sidinga amabhala amabili otshani nezitshalo ezomile.
- Qokelela utshani obunqunyiwe, amahlamvu, amaqabunga, umanyolo nokunye.
- Kwendlale phezu komhlabathi. Uthele ukokeleze izitshalo naphakathi kwazo.
- Ungatheli ngaphezu kwezitshalo noma uzicindezele.

Imininingwane siyithole ku-Mhlaba Consulting Group East London. i-projekti ka-water research

Comprehensive Learning Materials Package for Water Harvesting and Conservation in SA

Diversion swales



Flood-spate RWH or 'saaidamme'

Farmers and extensionists

Year summary 30 seconds / week of work

1. **Progress**
2. **Accreditation (again)**
3. **Feedback from college principles**
4. **Quick overview of manuals**
5. **Piloting process at UKZN**
6. **Capacity building**
7. **Gaps and challenges**
8. **Workplan for 2010**

Project Timelines

Year 1	Year 2		Year 3		Year 4	
Oct 2007 Mar 2008	Apr 2008 Sept 2008	Oct 2008 Mar 2009	Apr 2009 Sep 2009	Oct 2009 Mar 2010	Apr 2010 Sep 2011	Oct 2010 Mar 2011
Development of Framework • literature survey • Stakeholders • Target Group • Needs Assessment	Analysis and prepare Draft Learning Package Part 1 • National stakeholder workshop in May 2008 • Gap analysis between needs and available information • Learning package outline of all three packages		Prepare Draft Learning Package Part 2 and Part 3	Training and Pilot Testing of Learning Package • Liaison with colleges who are interested to trial materials • Training of facilitators (eg. extension workers) using materials • Monitoring and support to facilitators training learners		Revision and Finalisation • Revise content and structure based on feedback

Accreditation Framework

Unit standards
30 Credits - NQF 5

Universities | Agricultural Colleges | Other Institutions

Facilitation Manual - 15 Credits (Core)

National Certificate for Agricultural Extension (SAQA ID 59409).

- US 252476 (10 credits) Develop and implement an extension programme plan
- US 252474 (5 credits) Implement strategies for behaviour change

Technical Component - 15 credits (Elective).

- No relevant Unit Standards - drafted for submission to AgriSETA / SAQA.

Facilitation Manual – US's from the National Certificate for Agric Extension

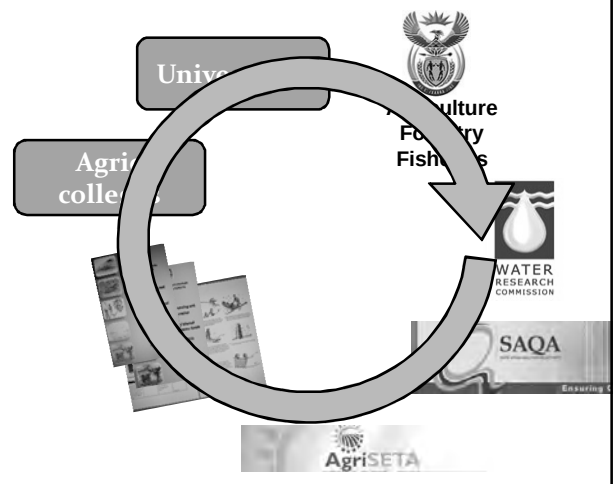
SAQA US ID	UNIT STANDARD TITLE	NQF LEVEL	CREDITS
252476	Develop and implement an extension programme plan. **Unit Standard Specific Outcomes:** • Assess the needs of clients to develop an intervention. • Develop extension solutions to resolve existing and anticipated problems in a programme. • Plan extension interventions for addressing the needs and problems identified. • Implement an extension plan for the selected extension intervention.	Old NQF level 5 New NQF level pending	10
252474	Implement strategies for behaviour change and innovation. **Unit Standard Specific Outcomes:** • Apply the concept of technology adoption. • Apply the theories and practices of participatory technology innovation and development. • Identify and contextualise the extent to which influencing factors affect the final decision towards change. • Establish the scope for behaviour change/innovation to determine the extent of intervention. • Develop and implement a simple intervention plan to change the behaviour of an individual/group/community.	Old NQF level 5 New NQF level pending	5

Learners at educational institutions

Agricultural Extension

Rural development

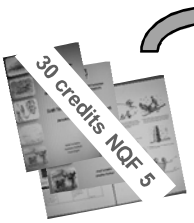
How to embed materials into existing Qualifications and Curricula ?



Qualified Practitioners – further training

Qualified Personnel

- Extensionists
- Development workers



AgriSETA

Accredited SKILLS PROGRAM

AgriSETA approved Training Institution

Who trains them ?

How to motivate further study ?

Agriculture Forestry Fisheries

EXTENSION RECOVERY PLAN

WATER RESEARCH COMMISSION

UMHLABA

Feedback from APAC – 23 Feb 2010

Very positive about the WRC initiative

Liked the guides – style and content

More colleges keen to use than thought

IMPORTANTLY

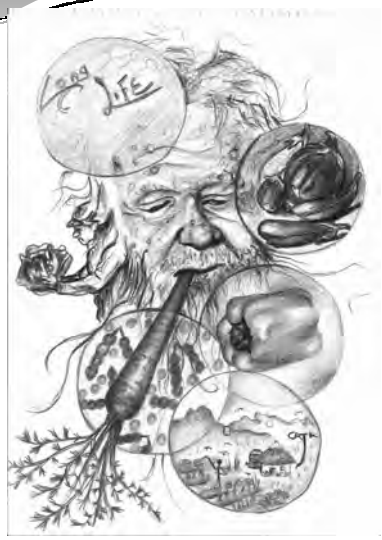
Priority should be skills programme - 30 credits

Integrate the two guides and teach together

WATER RESEARCH COMMISSION

UMHLABA

Annual Report



1. Progress
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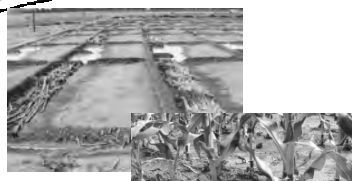

Infield RWH

Trenchbeds with diversion channels

Piloting underway at UKZN Jan – June 2010

1. Technical Module - Week 7
2. Weekly feedback - facilitator
3. End of course – learners
4. Facilitation module 25 March

Feedback from colleges & reviewers Early August 2010

The year in short

1. Progress
2. Accreditation (again)
3. Feedback from college principles
4. Quick overview of manuals
5. Piloting process at UKZN
6. Capacity building
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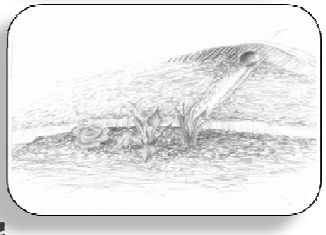
Capacity Building



1. Student artwork in guide

Plan – support 2 student artists
Actual – supported 68 students

2. Training of facilitators during pilot

Plan Train 8 – 10 (non accredited)
Actual Training 14 – UKZN accredited course

3. M. Ed student to research piloting

The year in short

1. Progress
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Gaps and Challenges - Ecotopes

1. Hensley (2008)

   Hensley – groups climate / slope / soils
   Ecotopes link to WHC in Free State only for 'infield RWH'

2. Mwenge Kahinda et al. (2008)

   Domestic RWH – Rooftops
   Infield RWH – micro catchments (about 20 methods)
   Exfield RWH - macro catchments

Gaps and Challenges - nomenclature

infield RWH = "tied ridges" with unplanted strip

infield RWH = about 20 methods of micro RWH

'run-on' RWH = specific : diversion swales / bunds
= general : 'macro RWH'
= runoff farming

DRWH / IRWH / XRWH

IRWH / XRWH / Non-field RWH

Gaps and Challenges - nomenclature

Type of WH	Kind of flow	Annual rainfall	Treatment of catchment	Size	Ratio
Micro-catchment	sheet and rill flow	> 200 - < 300 mm	treated or untreated	- 1000 m	1:1-10:1
Macro-catchment	turbulent runoff + channel flow	> 300 mm	treated or untreated	1000 m - 200 ha	10:1-100:1
Floodwater harvesting	flood water	> 150 mm	untreated	200 ha - 50 km?	100:1-10,000:1

Indirectly using the FAO classification which is same as Oweiss
Used already in WRC WH&C Scoping Study
Also noting all other names for the methods in summary page

Workplan

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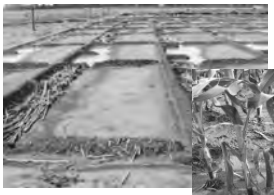
Draft Table of Contents – FINAL REPORT

Chapter	Description
1 Introduction	Target learners and institutional priorities Overview of guides Summary of project activities
2 Accreditation Structure	Process and consultative workshops National Dept of Agriculture Priorities Selected accreditation pathway
3 Development and educational paradigms	Overview of experiential learning approaches Extension trends and policy implications Adoption of participative approaches
4 Overview of Facilitation Guide	Structure and outline Approach and content of 'lecturers' manual
5 Overview of Technical Guide	Structure and outline Approach and content of 'lecturers' manual
6 Piloting of the Guides	Description of Process Outcomes and insights into materials Lessons for future piloting processes
7 Capacity Building	What was done What was achieved
8 Considerations for future knowledge development	Materials Package Content Taking the Accreditation Process forward Getting the package used at institutions

© J. Denison

Ancient practice going back to 2000 BC



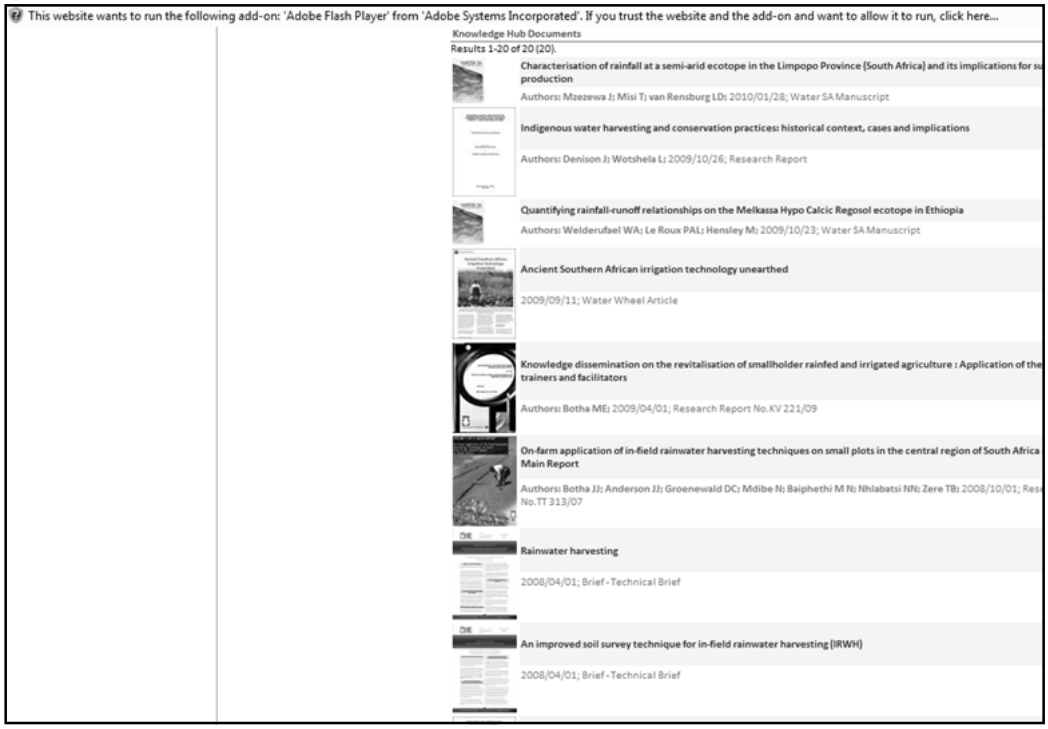
Infield RWH

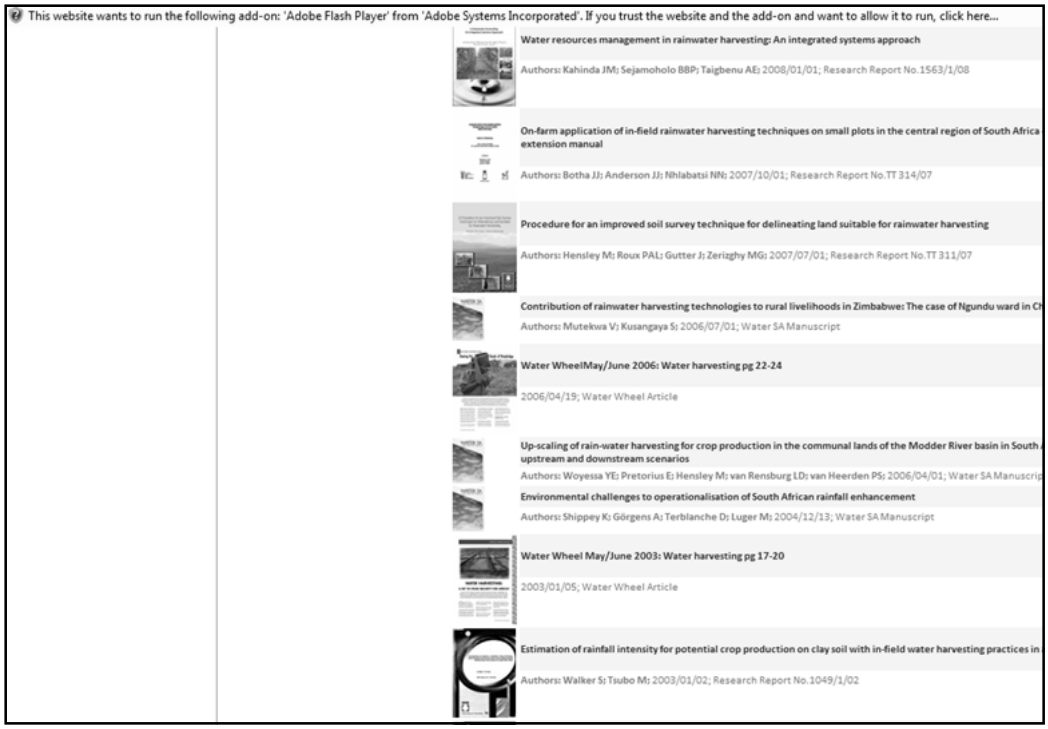
10 – 15 yrs

ARC

Modern Science

Trenchbeds with diversion channels


This website wants to run the following add-on: 'Adobe Flash Player' from 'Adobe Systems Incorporated'. If you trust the website and the add-on and want to allow it to run, click here...
Knowledge Hub Documents
Results 1-20 of 20 (20).
Characterisation of rainfall at a semi-arid ecotope in the Limpopo Province (South Africa) and its implications for su
production
Authors: Mzezewa J; Misi T; van Rensburg LD; 2010/01/28; Water SA Manuscript
Indigenous water harvesting and conservation practices: historical context, cases and implications
Authors: Denison J; Wotshela L; 2009/10/26; Research Report
Quantifying rainfall-runoff relationships on the Melkassa Hypo Calcic Regosol ecotope in Ethiopia
Authors: Welderufael WA; Le Roux PAL; Hensley M; 2009/10/23; Water SA Manuscript
Ancient Southern African irrigation technology unearthed
2009/09/11; Water Wheel Article
Knowledge dissemination on the revitalisation of smallholder rainfed and irrigated agriculture : Application of the
trainers and facilitators
Authors: Botha ME; 2009/04/01; Research Report No.KV 221/09
On-farm application of in-field rainwater harvesting techniques on small plots in the central region of South Africa
Main Report
Authors: Botha JJ; Anderson JJ; Groenewald DC; Mdibe N; Baiphethi M N; Nhlabatsi NN; Zere TB; 2008/10/01; Res
No.TT 313/07
Rainwater harvesting
2008/04/01; Brief - Technical Brief
An improved soil survey technique for in-field rainwater harvesting (IRWH)
2008/04/01; Brief - Technical Brief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extension manual
Authors: Botha JJ; Anderson JJ; Nhlabatsi NN; 2007/10/01; Research Report No.TT 314/07
Procedure for an improved soil survey technique for delineating land suitable for rainwater harvesting
Authors: Hensley M; Roux PAL; Gutter J; Zerizghy MG; 2007/07/01; Research Report No.TT 311/07
Contribution of rainwater harvesting technologies to rural livelihoods in Zimbabwe: The case of Ngundu ward in Ch
Authors: Mutekwa V; Kusangaya S; 2006/07/01; Water SA Manuscript
Water WheelMay/June 2006: Water harvesting pg 22-24
2006/04/19; Water Wheel Article
Up-scaling of rain-water harvesting for crop production in the communal lands of the Modder River basin in South A
upstream and downstream scenarios
Authors: Woyessa YE; Pretorius E; Hensley M; van Rensburg LD; van Heerden PS; 2006/04/01; Water SA Manuscrip
Environmental challenges to operationalisation of South African rainfall enhancement
Authors: Shippey K; Görgens A; Terblanche D; Luger M; 2004/12/13; Water SA Manuscript
Water Wheel May/June 2003: Water harvesting pg 17-20
2003/01/05; Water Wheel Article
Estimation of rainfall intensity for potential crop production on clay soil with in-field water harvesting practices in
Authors: Walker S; Tsubo M; 2003/01/02; Research Report No.1049/1/02

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