



Educational tools for infrastructural development



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WATER IS A source of life and researchers over the years have pointed to the fact that fresh water resources are not unlimited. Because drought is a permanent threat in South Africa, communities need to use these scarce resources with care so that future generations will be able to benefit from good quality water. Correct utilization of water does not mean merely consuming it without thinking what happens to it afterwards, but means that care should also be taken of the waste water in order to avoid pollution and alleviate the spread of dangerous diseases.

Water supply and sanitation are considered human rights and they are basic priorities of the Reconstruction and Development Programme in South Africa. Experience in developing countries has shown that provision of water and sanitation facilities should go hand in hand with education and training in their proper use before good results in improving the quality of life in the communities can be achieved. The beneficiaries of water supply and sanitation projects should learn where the water comes from, where the wastes go to, why these services should be paid for and how to take responsibility for and ownership over the infrastructure provided.

Realizing the complexity of the above issues and the nature of expertise in various organizations, the CSIR formed a working agreement with the Human Sciences Research Council (HSRC). Based on the needs of infrastructural development projects in South Africa the CSIR/HSRC partnership designed a Framework for Education and Training Processes in Community Water Supply and Sanitation Projects. This paper describes the development of the Framework, the processes included therein as well as the methodology for testing it with communities under actual project conditions.

Background

At the beginning of 1996 the CSIR launched a project to develop educational tools for technology transfer to non-technical audiences in the field of community water supply and sanitation. Extensive research on the state of the market in South Africa as well as abroad was carried out to determine what materials, processes and programmes were available and to ascertain the needs of society. The results of this research have clearly shown that many of the educational and training materials and systems were not developed in a scientific manner and that they were applied before proper testing and adjustment to suit the requirements of trainers and trainees alike.

The implementation of a project on community water supply and sanitation can be seen from two points of view - one looking at purely technical issues and another looking at socio-economic aspects. These were the basic aspects taken into consideration when the Framework for Education and Training Processes in Community Water Supply and Sanitation Projects was developed.

The CSIR is experienced in research and development in, *inter alia*, engineering, technical guidance and social sciences. The HSRC has expertise in the educational, training and cultural fields and has earned the trust of communities with whom it has been working over an extended period of time. The agreement between the two organizations was formed with the purpose of compiling a framework for training, education and information processes and materials for use in community-based water supply and sanitation projects.

The framework

One of the basic priorities of the RDP is the empowerment of previously disadvantaged communities by providing them with the knowledge to make their own decisions and to take ownership of development projects. This education and training is a vital part of every community water supply and sanitation project because the beneficiaries of these projects should be an inseparable part of the whole development process, from the pre-project phase through monitoring and evaluation, implementation and finally to the operation and maintenance after a project has been completed.

The research carried out prior to the development of the Framework identified four critical needs in education and training processes:

- 1 *A need for scientifically developed and tested materials.*
New educational products are required to address the full spectrum of education, information and training requirements encountered during infrastructural development. Such products can either be used as a basis for further development by interested parties, or can be used as they are.
- 2 *A need for quality control on the produced programmes.*
Many programmes have not been tested for efficacy, nor have they been designed to meet the requirements of infrastructural development. The level of understanding of the target audience has also not always been appreciated.

3 *A need for co-ordination of the development of educational/information and training processes and products.*

Many organizations involved in community water supply and sanitation are attempting to develop their own educational products and processes without first acquiring the relevant expertise and it is believed that scarce resources are being wasted. Another problem is the almost non-existent communication between development organizations, government departments, NGO's, etc. and the lack of information sharing.

4 *A need for guidelines.*

Guidelines on course content, visual materials, cultural aspects, etc. should be made available to enable new products to be developed in a tried and tested scientific manner and to obviate the need for all organizations to research the same subject.

Four major criteria have been identified for the Framework, namely the type of community, the infrastructural development process, the target user/audience and the skills/knowledge to be transferred.

1 *Type of community:*

When developing educational products and processes the type of community should be taken into consideration. The level of technical knowledge, cultural and religious practices, etc. will determine the nature of the product. Four broad categories of community have been identified, namely:

- Deep rural;
- Rural;
- Peri-urban;
- Urban.

2 *The infrastructural development process:*

The development process in community water supply and sanitation projects is seen as a combination of technical issues on one side and socio-economic issues on the other and is the backbone of the Framework. The process adopted must be clearly defined and sufficiently flexible to adapt to various types of infrastructural projects and various levels of community development. The process consists of a few separate but logically connected phases flowing from one to another and would typically commence with a community awareness phase, and progress through feasibility, detailed survey, project planning and implementation to operation and maintenance. Each phase has four stages - training, execution, monitoring and evaluation.

3 *Target Group:*

The target group both in terms of the educator/trainer and the educated/trainee will affect the structure and content of the material, as well as the type of product. A sound Framework will assist trainers such as:

- government departments;

- NGO's;
- developers;
- development agencies, etc.

to provide quality education and training with long lasting results as well as focus resources on development of appropriate educational materials. For the beneficiaries of these education and training programmes it will mean a better way of communication, a basic understanding of services as well as knowledge that will stay with the community after the implementation of a project has taken place.

The nature of educational materials will also be affected by the type of specific audience, i.e. scholars, adults, women, community leaders, small contractors, etc.

4 *Aspects to be addressed:*

The aspects to be addressed by a framework of such magnitude cover a wide spectrum from basic health and hygiene education, creating a culture of payment and environmental issues, through community empowerment in infrastructural development initiatives to leaving knowledge within the community after the implementation of a project. A more comprehensive list of aspects will eventually have to be compiled in consultation with those involved in development projects, and topics may be added for specific communities and needs.

The Framework developed by the CSIR / HSRC partnership is based on three of the above elements, i.e. development process, target group and aspects to be addressed, and uses the developmental process as a basis. One framework is applicable to all types of communities, although the actual material used for each will differ.

Testing of the framework

The Framework was developed by a team of specialists in different fields : engineering, social sciences, education and training. The Framework must now be tested with the beneficiaries of various water supply and sanitation projects before making it available for use in infrastructural development projects.

The Framework consists of eight phases, namely:

- Pre-project phase;
- Feasibility phase;
- Detailed Survey phase;
- Project Planning phase;
- Monitoring and Evaluation phase;
- (Pre-) Contract phase;
- Construction phase, and
- Operation and Maintenance phase.

Testing of the whole Framework step by step will be a time consuming and expensive process because it requires following the implementation of a whole project, which in some cases may continue for a number of years. Four



Figure 1. Framework for education and training processes in community water supply and sanitation projects

phases have therefore been identified for testing and evaluation, namely:

- Pre-project phase;
- Monitoring and Evaluation phase;
- Construction phase, and
- Operation and Maintenance phase.

Each one of the above phases of the Framework will be tested under the conditions of actual infrastructural development projects with different types of communities, if possible.

The CSIR has already developed various educational tools such as posters, booklets, a scale model of a settlement, manuals, etc. which will be used to convey the information to the communities involved in water supply and sanitation projects. The training will be done by facilitators already engaged with ongoing or planned projects who will use the available tools and follow the steps and requirements of the Framework. The process of training and education will be monitored by social scientists and engineers from the CSIR as well as specialists in

education and training from the HSRC. The facilitators and community members who will be receiving the training will also be interviewed. These discussions will provide a valuable feedback on the suitability and applicability of the Framework. The results of the evaluation will then be used for final revision of the Framework and the production of guidelines for using the Framework in water supply and sanitation projects.

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