

Didactics Meet Water: Providing First Level Response Officers in Cape Town the Dedicated Training they Need

J. Oost^{1,2}, M. De Sousa-Alves³

1. *World Water Academy, Groningenhaven 7, The Netherlands.*

2. *AquaDactics, South Africa.*

3. *City of Cape Town, South Africa.*

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Abstract: City of Cape Town in partnership with the South African training centre AquaDactics and Vitens-Evides International (The Netherlands) started the development of training modules for First Level Response Officers. The main aim of this capacity building project was to showcase the philosophy and way of thinking of the World Water Academy in The Netherlands, the mother organisation of AquaDactics. The first intervention took a week, excluding preparations and after-care. The basic philosophy is empowering local professionals to train their peers with a quality programme and quality materials by quality trainers in a quality environment. All aspects with the focus on one thing: learning efficiency.

The time for training for professionals or adults training, also Life Long Learning is lacking, because the major priority is working. Training is often of secondary importance, because of lacking of time, funding, motivation or a lack of a good and accredited or acknowledged training programme. Meanwhile the employer mostly pays the training and the less time and money, the more attractive for the employer. The focus of training time reduction, without losing relevant content and which is applicable in the daily routine, the next day. Key is the prior knowledge, skills and attitude of the professionals (including learning characteristics) and the learning objectives, based on the tasks and performance indicators the learner needs to learn or grow.

Key words: Capacity building, Water Reticulation, Training, Didactics

Central message: A didactical approach that is focusing on learning efficiency is the key to implement reliable and tailored training programmes for water professionals.

1. Introduction

City of Cape Town in partnership with the South African training centre AquaDactics and Vitens-Evides International (The Netherlands) started the development of training modules for First Level Response Officers. This job function is rather tailored in the organisation of the water reticulation department of City of Cape

Corresponding author: J. Oost, World Water Academy, Groningenhaven 7, The Netherlands.

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Town. No training programmes are available for this specific function. The current method of training is internal peer to peer expertise exchange between senior and junior staff. The senior staff is not sufficiently recognized by the expertise because of the lack of sufficient certificates or diplomas. Because of some (or near) retirements of experienced staff, the City of Cape Town is looking for ways in which to retain the knowledge gained by experienced officials and to share that knowledge with new staff.

The main aim of this capacity building project was to showcase the philosophy and way of thinking of the World Water Academy in The Netherlands, the mother organisation of AquaDactics. The first intervention took a week, excluding preparations and after-care. The basic philosophy is empowering local professionals to train their peers with a quality programme and quality materials by quality trainers in a quality environment. All aspects with the focus on one thing: learning efficiency (Maenhout and Oost, 2012, Maenhout and Oost, 2013). This means the best ratio between learning result and the time, money and effort spend on this.

Introduction to Lifelong learning

The world is changing constantly, so does the information. People are constantly learning everywhere and at all times. Lifelong learning is the ongoing acquiring of knowledge and skills for either personal or professional reasons. Learning can no longer be divided into a place and time to acquire knowledge (school) and a place and time to apply the knowledge acquired (the workplace). Instead, learning can be seen as something that takes place on an ongoing basis from our daily interactions with others and with the world around us, like in the workplace. The ways of learning of gaining knowledge and skills vary per person, see Figure 1 (UNESCO, 2012).



Figure 1: Pathways to skills

The most used terms for the forms of learning are: formal, informal, or non-formal learning. Formal learning is the education or training which is most familiar. It is delivered in a systematic intentional way with learning objectives by trained teachers within a school, higher education or university. It is always intentional, because the learner's explicit objective is to gain knowledge, skills and/or competences. Informal learning is never organized. It has no set objective in terms of learning outcomes and is never intentional from the learner's standpoint. Often it is referred to as learning by experience or just as experience. Non-formal learning is in between of formal and informal learning. It could have thousands of forms and approaches (OECD, 2017).

The (professional) life of an individual person can be divided in successive periods in life, see Figure 2. Depending of the kind and level of education the age of pupils is to approximately 16-18 years. The following period is the student period, which can be set to 20 years (finish of vocational school) and to 26 years (graduation at university). After leaving school/university a person starts working as a young professional. After several years of working experiences the young professional gains expertise and becomes a professional. The exact moment is vague. Looking at the length, the working life as (young) water professional is approximately three to four times longer than the learning life at school. In this period a lot of changes in information, innovations, knowledge and skills occur. Looking at the changes of the last 50 years, it becomes even more and faster. So it is at most of importance to train yourself a lifelong. At the end of the working life, the professional becomes retired. More and more this is not the end of the working life, for instance he can stay active and shares his expertise (Maenhout & Oost, 2013).



Figure 2: pathway from pupil to retired professional

2. Methodology

Initial education versus professionals' training

Looking at the 'pathways to skills' of UNESCO (2012) the distinction also can be made between initial education versus life-long development and applied versus scientific knowledge, Figure 4 stresses the skills of young professional's phase. It does not take into account the changes and adaptations during the years of being a professional. The young professional reaches the top, however no matter what the pathway is, a professional will try to raise the top during his working life.

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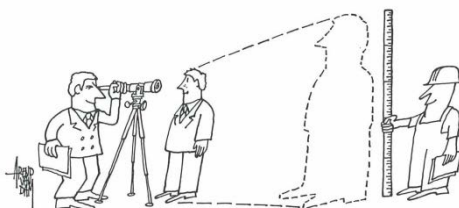


Figure 3: Sketch of Training of a Professional

A National Qualifications Framework (NQF) is the formal system that records levels of learning achievement to ensure that the skills and knowledge that have been learned are recognised. Every country or region has its own set of qualifications, which can be transferred to other countries most of the times. The NQF is a good system to determine the level of education and training programmes, looking at formal learning (SAQA 2017).

Training life cycle: ADDIE

The ADDIE model uses a circular approach in the training life cycle, Figure 4. The underlying philosophy to this ADDIE model is the didactical model, Figure 5. The didactical model focus on the main aspects during the training design and development.

The ADDIE model consists of the following steps:

1. Analyse: The Analyse step defines the set of Knowledge, Skills and Attitude (K+S+A) of the different competences needed by the target group.
2. Design: The Design step creates the outline of the full programme. The programme is divided in modules. The modules will be built like Lego-blocks: combining modules to a full programme. A module combines contents, teaching methods, work practise, assignment etc.

3. Develop: The Development step creates the modules with theory, practical assignments, exams (by walking around), presentations, role play, cases etc.
4. Implement: The Implementation step is the roll out of the programme. Each participant will be tested at the start of the learning trajectory to define his/her knowledge and talents.

Note: The trainers for the class-based modules will be experienced professionals or professors. The Training of Trainer programmes will prepare trainers and/or professors to the deliver the programme and coach the participants.

5. Evaluate: The satisfaction of the participants as well as the effectivity of the learning trajectory will be monitored. The results of the monitoring will be used to adapt the programme.

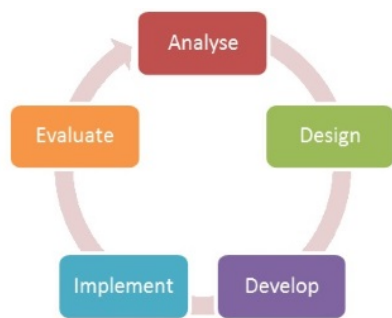


Figure 4: ADDIE model

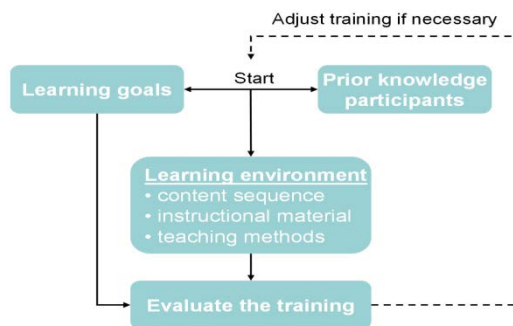


Figure 5: Didactical model

Analysis: combining target group and learning objectives

Normally a training needs analysis (TNA) is executed in this phase, for example a working filed consultation, desktop research and/or a market based needs analysis. The Training Needs Analysis really focus on and combine the two main aspects of the training: 1. Target group and 2. Learning objectives. Without tailoring these two aspects, the training will be useless in terms of relevance and learning efficiency and thus a waste of time and money.

Figure 5 shows the combination of the Sketch of Figure 3 and the didactical model of Figure 5. The blue Level is about the prior knowledge, skills and attitude, including the learning style, characteristics and motivation is based on the Training Needs Analysis. The learning objectives are described with the red Level. It focuses on the set of knowledge, skills and attitude that the learner need to grow. For a more objective way of determining the learning objectives the term SMART is used. SMART stands for: Specific, Measurable, Acceptable, Realistic and Time-bound.

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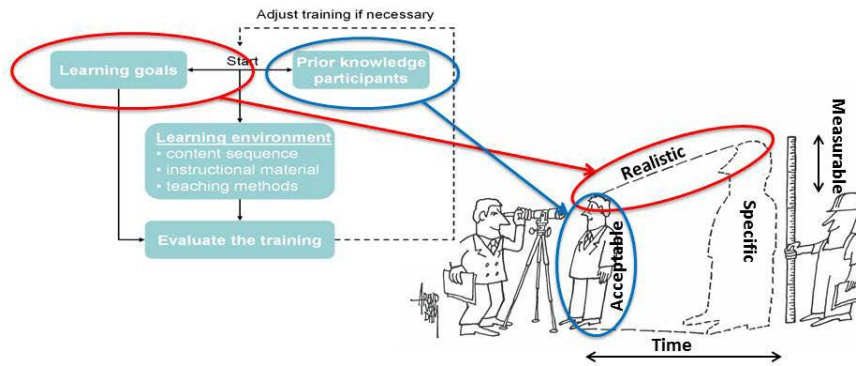


Figure 5: Focus on the professional and his/her learning

Activating teaching methods

The modules were designed using so-called activating teaching methods, a concept that is innovative to the water industry in South Africa. It entails development of balanced training material/media that is highly interactive and is designed to capture and hold the attention of the audience. Such training will ensure higher effectiveness and applicability (Churnanduri et al. 2015).

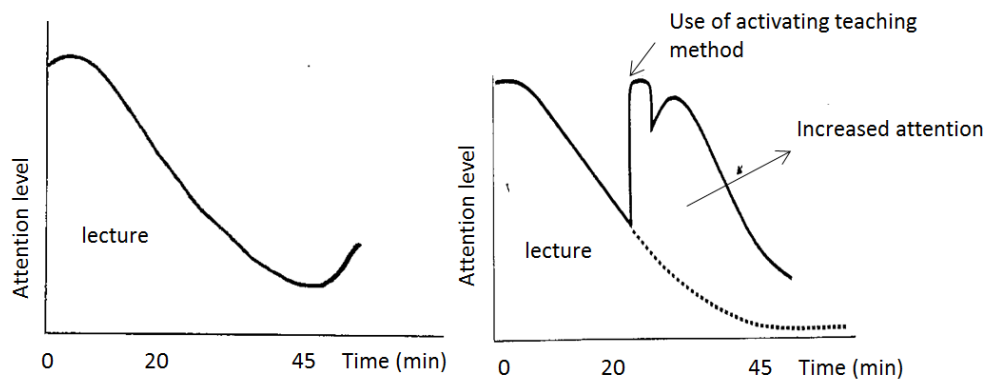


Figure 6: Learning Effects

Project results

In this capacity building project the focus was on the design of a framework for the training, based on an in-depth Training Needs Analysis. Looking at the ADDIE model for training development in Figure 2, the two first phases (Analyse and Design) were finished and a start was made with the third phase (Develop). Only the first training days were developed to make it classroom ready.

The level of the target group First level response officers was basic knowledge and skills on the operational processes. The way of training is more on acting and is compared to the National Qualification Framework (NQF) level 3 and 4, see figure 1.

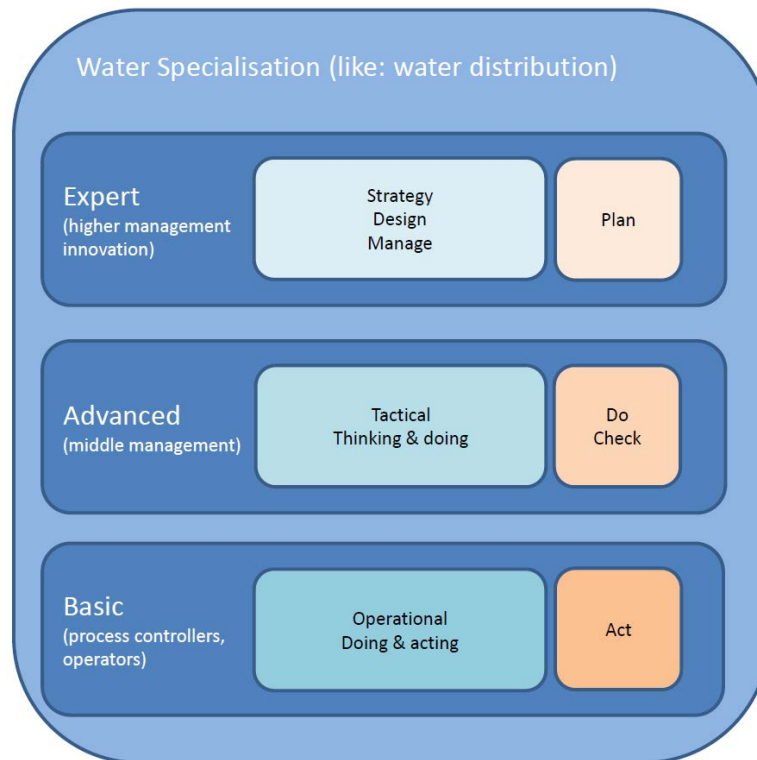


Figure 7: Learning levels and the rough characteristics

In this process it was interesting to see the differences of perception of the prior knowledge and skills of the target group. The involved experts in this project (more on expert and advanced level, Figure 7) thought that the prior knowledge and skills was higher than the actual status and that the preferred learning outcomes were too ambitious. In this process some experienced First Level Response Officers (the ‘models’ of the target group) were asked the same and they came with different answers. This shows the importance of knowing the target group before starting with any development.

The Training Needs Analysis resulted in the design of a Modular course Water Distribution and Control for First Level Response Officers consisting of the following modules:

- Basics of water distribution
- Water quality, sampling and hygienic working
- Water distribution specials
- Water Loss & Non-Revenue Water

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- External stakeholder awareness

The first module has been developed into a detailed programme with learning objectives and learning resources (powerpoints, handbook and handouts), a Trainer's Manual and Assessment (database with questions). This module is ready for implementation.

This project was the start of the design and development of a full training programme for First Level Response Officers of the City of Cape Town. Modules 2-5 still needs to be developed by the CCT.

3. Discussion

A similar project has been executed in another South African metro on a different topic, but with the same philosophy and way of working. eThekwini Water & Sanitation in Durban developed a course for Process Controllers (PC) on Wastewater Treatment Plants, which have more or less the same level as the First Level Response Officers. The results of this project is similar to the project in Cape Town. The evaluations/feedback sessions with the trainers, management and the trained PCs for eThekwini Water & Sanitation were held. During the first trial, seven out of eight PCs rated the course as excellent while one rated it as good (from excellent – good – average – bad – very bad). The general feeling of the participants was that they had learned a lot and wished to have more training like this. They expressed that the shift assistants would show big improvement after similar training. The trained trainers of EWS were also very positive about their new skills. They felt honored to be equipped and confident to exchange their knowledge with colleagues (Churnanduri et al. 2015).

This philosophy and capacity building was embraced by the City of Cape Town Municipality and eThekwini Water & Sanitation Department in Durban. Officials are certainly excited and eager to commence with the programme.

4. Conclusion

The awareness of a good structural training development was the essence of this capacity building project in City of Cape Town. Especially the project team of City of Cape Town, existing of experienced and Master-leveled professionals in the field of reticulation found out that it was not easy to determine the prior situation of a learner. Therefore, we asked several experienced First Level Response Officers to join the training development team to give input and feedback.

The training programs are aimed at upskilling First Level Response Officers by a training manner that is fun, relevant and interesting and is attached to the knowledge and experience they already have. Some First Level

Response Officers will be empowered to become trainers themselves and to train their peers. This allows the class interaction to be more relaxed and brings out the best in those that undergo training. It also builds confidence in those that give the training and ensures longevity of the imparted knowledge.

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