

Advanced Occupational Standards as Basis to improve TVET and Teacher Training in the Sultanate of Oman

Abstratct

Highly skilled teachers in TVET with professional knowledge of real work situation in their field will be a valuable resource for the Sultanate of Oman. In order to improve the vocational training system the Ministry of Manpower is running a Project called Occupational Standards and Skill Testing Center (OSSTC).

The first part of the article presents the planed institutional setup of the OSSTC that will be operational till the end of the project in 2010. The second part will focus on the two main products of OSSTC as means to improve TVET:

- a) Advanced Occupational Standards and
- b) Competence Tests for Certification and Evaluation.

The third and final part will give an outlook on a teacher training concept that makes use of project results and experiences.

Table of Content

Introduction.....	2
Overview of the Occupational Standard and Skill Testing Centre (OSSTC).....	4
Advanced Occupational Standards (AOS)	4
Testing & Certification.....	5
Development of Human Resources	6
Research in TVET	6
Public Private Partnership.....	6
Advanced Occupational Standards (AOS) and the Interlink to Occupational Competence Tests	6
Work-Process Analysis (WPA).....	7
Occupational Competence Tests	8
An approach to force Teacher Training based on AOS	9
Description of Macro Level Work	10
Description of Meso Level Work	10
Description of Micro Level Work	11
Outlook	11
Contact	12
Literature	12

Introduction

The Sultanate of Oman is a country in the south of the Arabian Peninsula with a size of app. 309.500m² and app. 2.567.000 inhabitants. The population consists of 73% Omani and 27% Expatriats.

The rate of illiteracy has been decreased in all regions of the Sultanate in the duration from 1993 to 2003 from 41.2 to 22%. The GDP was at 15.604 US\$ in the year 2006 (Ministry of Social Development, 2009). According to an actual study from Rand corporation, Oman's biggest challenge are concerns about unemployment in face of a growing youth population on the one hand and oil reserves – its major source of revenue since 1964 – quickly being depleted on the other hand (Gonzales et al., 2008). The rate of unemployment among Oman nationals was between 12 and 15 % in the year of 2006.

In order to reduce unemployment of nationals and to reduce dependence of the country on foreign workers which build the backbone of the Omani work force, the

government has launched a labour market reform to increase the share of Omani nationals in the workforce. This process is called “Omanization” of the private sector is encouraged by goals for employing Omanis and by restrictions for hiring non-nationals. In addition, education and training has been the main target for reform efforts since many years – this includes the establishment of a more effective TVET system.

In order to empower vocational education and training in the Sultanate to produce better trained Omani nationals on the level of skilled and semi-skilled work, the Ministry of Manpower has initiated in 2005 the project “Occupational Standards and Skill Testing Centre (OSSTC)”. The project is implemented in cooperation with the German Agency for Technical Collaboration (gtz).

A barrier for success of “Omanization” efforts and policies on the labour market till today is the mismatch between labour market demands and recent graduates’ skills. More than 230 observation-interviews in companies executed by OSSTC analysts revealed that graduates from vocational education and training institutes very often are not accepted by companies because of insufficient motivation and work related competence. Companies therefore complain that a sufficient number of nationals are lacking who possess the skills and dispositions required for employability in order to fulfil the Omanization quota in the private sector.

The major achievement of OSSTC is the development of Advanced Occupational Standards (AOS). AOS can be seen as a preparatory step for the development of sustainable training and teacher training solutions based on modern occupational profiles. Up to the present, OSSTC has developed nearly 60 AOS with the help of a pool of international subject matter experts. The standards have been established in close cooperation with companies in Oman. Collaboration with the private and public sector is a key component of the center’s activities.

In order to further elaborate on the achievement, the article is roughly organised in three parts.

The first part presents the planned institutional setup of the OSSTC that will be operational till the end of the project in 2010. The second part will focus on the two main products of OSSTC as means to improve TVET:

- a) Advanced Occupational Standards and
- b) Competence Tests for Certification and Evaluation.

The third and final part will give an outlook on a teacher training concept that makes use of project results and experiences.

Overview of the Occupational Standard and Skill Testing Centre (OSSTC)

The Occupational Standard and Skill Testing Centre (OSSTC) is supposed to become a future department of the Ministry of Manpower. Its basic purpose is empowerment of TVET in the Sultanate of Oman. In close cooperation with the private sector, the OSSTC establishes Advanced Occupational Standards (AOS, definition see below) which fit the needs and demands of the labour market in Oman. In addition to the development of the AOSs for a specified number of occupations, OSSTC will take charge in the organisation and implementation of new curricula, teacher training concepts, and occupational competence tests – all oriented or related to the AOSs.

The OSSTC will have 5 units addressing different functions as followed:

1. The development of Advanced Occupational Standards in an ongoing dynamic process with companies/ the private sector.
2. The development and administration of occupational competence tests based on the AOS and the development and operation of a national system for testing and certification.
3. The establishment of concepts and programs for Human Resource Development in TVET.
4. The planning and execution of scientific research in TVET with international relations for further enhancement of the TVET-System
5. The facilitation of an effective partnership between private sector companies and the Ministry of Manpower in all relevant areas of the OSSTC and vocational training in general.

Advanced Occupational Standards (AOS)

This unit is the heart of the center and the backbone for activities in all the other units. The development of AOSs provides a platform for the development of effective vocational training curricula, testing packages, and teacher training concepts.

Shortly, AOSs give a structured description of the competencies required for skilled and semi-skilled work. These competencies are specified according to core work

processes (CWPs) which include objects (materials, products, general tasks of work, phenomena) as well as tools, methods and organisational features mediating the object related activities of the worker. Therefore, a CWP can be introduced as a repetitive pattern of interactive activity related to objects that are constitutive for an occupation. For example, “Standard Service” is the name given to a CWP that constitutes (among others) the occupational profile “Automotive Mechatronic”. “Table Service”, another CWP, obviously belongs to the occupational profile “General Waiter”.

It is important to notice at this point that the definition of CWPs and related competencies requires a profound analysis of the working processes on the shop-floor level. OSSTC adopted the scientific procedure of work process analysis which was introduced for example by Spöttl and other (see e.g. Spöttl 2000). The procedure is well established in the context of vocational research in Europe and in particular in Germany.

Testing & Certification

The core activity of this unit is the development of reliable and valid tests that can be used to measure entry-level competence with reference to the AOS. Test scores shall be used, for example, to classify advanced vocational beginners who have first work experience (acquired for example during apprenticeship or initial training) and are ready to apply for an employment as a skilled worker.

Practitioners from the shop floor and subject matter experts have to be involved as much as possible in the test development process (e.g. item writing) so that the test content is correct as well as practically relevant.

The tests, which the OSSTC will release, are designed to support decision-making in two areas: First, pre-selection of applicants for an occupational first employment and, second, evaluation of TVET outcomes.

The OSSTC has adopted a web-based testing solution. Thus, tests are available in a paper-pencil and web- or computer based form.

For the web-based testing solution an Open Source Product called “ILIAS”¹ is used for the distribution and data collection.

¹ ILIAS is an acronym for Integrated Learn-, Information- and Work cooperation-System. For further details look at <http://www.ilias.de> (english website)

Development of Human Resources

The purpose of this unit is to plan, organize and implement training programs which will improve both the quality of OSSTC activities itself (in-house training) and the way teaching is realized in TVET. The primary target group for providing external training are teachers, instructors, and trainers of the Vocational Training Institutes and Centres in the country. In addition, the unit will also offer special training for trainers working for private sector companies. For example, a future training need of company training staff is addressed to the introduction of learning forms and methods requiring the collaboration between schools and companies (e.g. learn and work assignments, internships).

Research in TVET

The OSSTC research unit is intended to provide empirical evidence for strategic decision making related to all issues of TVET. Research topics of interest for example are how core work processes are an object of change in the future or what will be the specific effects of establishing more work process oriented learning strategies in TVET for the employability of young Omani workers.

Therefore, recommendations based on research results of this unit will help to systematically improve the work of OSSTC but also of the Ministry of Manpower, with its training institutes as well as private sector training efforts.

Public Private Partnership

The purpose of this unit is to strengthen the effective cooperation and relationship between the public and private sectors. It serves as facilitating agent for all activities that involve private sector companies, e.g. in the development of AOS and entry-level tests but also for further training of technical teachers and instructors and for (T)VET research. Therefore a network of representative companies of every occupational field has to be build up and enhanced.

Advanced Occupational Standards (AOS) and the Interlink to Occupational Competence Tests

The development of Advanced Occupational Standards (AOS) is an essential part of the OSSTC's work. As mentioned before, AOSs describe the qualifications and

competencies which a skilled worker must possess in order to perform successfully at the workplace.

Almost 60 AOS have been developed in 15 occupational fields during the project up to the present. These 60 AOSs will cover approximately 80 % of the labour market in Oman.

In principle, AOSs deliver general descriptions of basic competency dimensions (including tools, methods and objects) as well as personal requirements (e.g. knowledge, skills, and abilities) that have a defining character for work in the occupation.

AOSs in particular reflect company needs and describe competencies for skilled and semi-skilled workers and evidently focus on occupations rather than jobs. Any AOS description comprises the following sections:

1. A brief description of the occupational profile
2. A list of all relevant core work-processes that constitute the occupational profile
3. A list of the competencies relevant for performing each of the core work process
4. A detailed description for each core work process in terms of objects, mediating aspects, and conditions in the organisational environment.

Furthermore AOSs are providing the common ground and a rationale for the achievement of occupational competence tests, curriculum development and teacher training programs. The AOS (in its content) is the outcome of a Work Process Analysis (WPA) explained below.

Work-Process Analysis (WPA)

Work-Process Analysis (WPA) is a scientific procedure used to elicit relevant information about occupational work activities and contexts that are required to specify the content of the AOS. A Core Work Process represents a holistic cycle of activities structured through planning, operation control and evaluation of work (Haegele 2002). The analysis of Core work Processes takes place at the workplace and requires the involvement of workers as interview partners. In addition, curriculum specialists from the Ministry of Manpower can also take part in the analysis.

It is important that the research team establishes a positive relationship with the management or owner of the company because they have a huge influence on the accessibility of information and observations.

The analysis is rooted in hermeneutic interpretative phenomenology: Mutual, dynamic and contextual understanding about the observed processes (including materials, tools etc.) will clarify the specific skills and competencies required to do the job but also all relevant business and service activities that the company entails.

The objective of WPA, in this context, is to gather enough concrete information from companies and establishments about core work processes and the core competencies applied on shop floors. This enables the WPA-team to develop AOS on the level of skilled workers.

The whole process of developing the AOS has to be prepared and carefully planned. For example, field visit sights have to be explored in advance. In addition, teams of experts with knowledge about the particular occupational field and facilitators must be available before the WPA is initiated. Furthermore, the scope of the targeted occupation and the related occupations in the particular sector of economic activity has to be sufficiently defined. This process can take several weeks or even months. The overall process can be broken down into four major phases – each consisting of several work activities:

- A. Planning and Preparing
- B. Visiting Companies and Carrying-out WPA
- C. Development of AOS
- D. Recommendations for further handling of AOS regarding curriculum development and career paths for the occupation

Occupational Competence Tests

Test development for the OSSTC project today has an initial, ground-setting character. It is the first time that a systematic approach to testing vocational competencies is realized in the Sultanate. At the beginning, the OSSTC has two central aims:

1. Development and implementation of a strategy for initial test development that enables systematic participation of practitioners in the occupational field (from different countries) to emphasize work process orientation of test content (validity

aspect). In addition, the approach to test development is expected to produce results in a relatively short time (test release after approximately 3 months).

2. Realization of a prototype web-based test infrastructure that provides a platform for test administration as well as test development. The platform, among other demands, has to be extendable according to future demands and specifications.

OSSTC tests have a two dimensional structure: First, items (multiple choice) have to cover each CWP of the occupational profile of the AOS. For example, 10 CWPs comprising the AOS for Carpenter are tested with 15 items per CWP resulting in a maximum test length of 150 items. A second dimension is the distinction between items that require either an active (problem-solving) or receptive performance from test takers.

Practitioners from the shop-floor-level (e.g. foremen, supervisors) generate test items during Item Generation Workshops which are monitored by test development specialists. These items are closely related to the Core Work Processes of the Advanced Occupational Standards. The generated items will be reviewed by a group of selected practitioners before a field test is conducted with a sample of “entry-level” workers (workers with 0-12 month of experience). Based on the field test results the final test form together with test use specifications (e.g. cut-off scores) is released. In 2009 a test for the occupational profile Automotive Mechatronic was released by the OSSTC. The test was administered to a representative sample of students ($N=57$), freshly graduated from Vocational Training Centers (VTCs) in Oman. Test performance of this group was significantly lower than for a group of workers (mainly expatriates) representing entry-level or minimum competence per selection by eight companies located in the capital area of Oman. In summary, the study delivered clear evidence that TVET in Oman has to improve in the direction of work process orientation as a precondition for employability of Omani nationals.

An approach to force Teacher Training based on AOS

Testing and Standard development are the basic elements to empower the unit “Development of Human Resources” of the OSSTC. This unit has to rely on an effective programme for further training of the staff of the OSSTC. Beyond this initial responsibility for training, the establishment of the department for Teacher Training and Train the Trainers is the indispensable supplement to the work of the OSSTC.

With rapid change in education and training in mind and even more importantly being aware of the need for improvement of the present teach-force the further training of teachers should be a priority aspect with regard to quality standards in training.

The future work for Teacher Training will be done on 3 different levels:

1. The Macro Level Work focus on Curriculum Development and new training system approaches. Didactic advises are given how to train for the new AOS.
2. The Meso Level Work focuses on the change in the Vocational Training Centres. Advices are given how to change the course planning and the coordination in the VTC.
3. The Micro Level focuses on the lesson Planning. Methodological and technical didactic advises are given to teachers to deal with modern Learn- and Work Assignments, concepts of self reliant learning and work process orientation.

Description of Macro Level Work

Main task on the Macro Level is the endorsement of the AOS through companies, the chamber of commerce and the Ministry of Manpower. Based on that endorsement of the AOS the development of new curricula and Training Systems will be established.

The role of the OSSTC is restricted to ensuring the quality of curricula matches the quality of teaching, e.g. to provide quality assurance and direction regarding the establishment of state-of-the-art andragogic programmes in adult training, training teachers, trainers and instructors and in conveying the necessary pedagogical skills to trainers and training coaches in the companies. Occupational Competence Tests, as well as the concept of Learn and Work Assignments (LWA) (Berben 2008) has to be considered on the Macro Level Work as well.

Description of Meso Level Work

After Endorsement of the AOS and the agreement on designing a new training system the development of a program for each vocational training centre (VTC) (Vision, Identity, Mission Statements, Overview and didactic approaches) is the main step for work on that level.

The VTC has to coordinate and implement the training system based on the AOS and the new shaped curricula. Therefore a yearly course plan in all occupational fields is a necessary requirement to ensure the quality of new teaching methods.

This plan considers planning, implementing and evaluating of state-of the-art teaching methods.

On this level concepts and time frames will be developed to train the teacher and Trainers how to operate with LWA.

Description of Micro Level Work

The pedagogical qualification of the trainers and the training coaches has to be upgraded in the micro level work. Andragogic concepts will be implemented to train the teacher trainer and instructors to design LWAs. Main part of a LWA is an idealized Core Work Process (see e.g. Berben 2008).

The idealized Core Work Process will be discussed and specified together with practitioners and trainers from companies of the private sector.

This specified core work process is the backbone of future courses and educational units in the VTC and for training in the companies. Work related inputs needs to be attached to the core work process to strengthen the variety of competencies which have to be conveyed.

The LWAs need to have an intensive preparation and must be introduced very deeply and carefully. The evaluation has to consider varieties of action oriented test methods. Only with the assistance of qualified teacher, instructors and training coaches can the training potential of the companies and the VTCs sufficiently be exploited.

For this purpose an effective Train the Trainer and Train the Teacher programme has to be offered which explains, how the concepts of work process orientation and learn and work assignments can be implemented to vocational education and training.

Outlook

The work of the OSSTC project will be accomplished at the end of 2010. The current debate indicates that the units of the OSSTC are likely to be integrated as a department of the Ministry of Manpower. In the future concepts have to be developed to ensure that rapid changes and the high complexity at the workplace will continuously become part of the AOS, of Testing and Certification and of Teacher Training.

To create the basis for effective Teacher Training solution is one of the most important tasks for the TVET-System in Oman. It has to be seen as a complex and differentiated task to match international standards.

Highly skilled teachers in TVET with professional knowledge of the core work processes in their field will be a valuable resource for the Sultanate of Oman.

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