<u>Competence Standards for Technical and Vocational Education and Training TVET</u>

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1. <u>Objective</u>

In different sectors of industry and technical vocational institutes, centers and schools, due attention is given to the performance of the craftsmen / apprentices / trainees / students by applying both Competency Based Education and Training CBET as well as Competency Assurance Management System CAMS. The purpose of these systems is to provide guidelines to management to set valid and reliable controls in place with a view to have reasonable assurance of meeting their business objectives by assuring that their employees / apprentices / trainees / students are well trained, assessed, verified and proved to be competent at work location and that they can discharge their responsibilities in a safe and effective manner.

The strategy of Competency Based TVET is based around "Occupational competencies" which are established for each career field and for each job title. A Competency Based TVET System generally uses combinations of powerful techniques to ensure that the needs of different Industry sectors are addressed (demand), courses or competency based training programmes are developed, competency based assessments / verifications are conducted, employees / apprentices / trainees / students are efficiently trained and competent. In this regards, techniques such as Management Information System MIS, Knowledge Management KM, Monitoring & Evaluation M&E and Competency Assurance Management System CAMS are generally used.

2. <u>Competency</u>

The Competency is defined as the individual's ability to use, apply and demonstrate a group of related awareness, knowledge, skills and attitudes in order to perform tasks and duties successfully and which can be measured against well-accepted standards (levels) required in employment as well as assessed against provided evidences at work location. The competency affects both individual's job responsibility and performance on the job and usually fall into two categories, namely technical and behavioral.

The key aspects of the definition of competency are:

- Any job / occupation can be effectively and sufficiently described in terms of the Tasks that successful workers in that occupation perform.
- All Tasks have direct implications for the Awareness, Knowledge, Skills, and Attitudes Competencies that workers / trainees must acquire in order to perform the tasks correctly.
- Assessment is made on how the individual is actually performing work.
- An individual is incompetent no matter how much knowledge he has, as long as he can't apply his knowledge and skills appropriately at work location.
- The assessment must be objective by conducting it against defined <u>Competency Standards (Levels).</u>

The definition of competency implies a more formal, objective process of assessing performance by clearly knowing <u>what</u> is being assessed and <u>how</u> it is assessed. This

approach is quite different than most of the past performance assessment practices utilized in the industry.

3. **Competence Based Occupational Standards**

One of the most important and significant developments in TVET, was the development of Competence Based Standards to support the design of training programmes and curricula.

The move towards competence based standards started in the mid 1970s and represents a response to criticisms that education and training programmes were failing to meet the practical requirements of employment. In many occupational areas, employers found that newly qualified graduates of vocational training programmes were not capable of meeting the requirements of practice without substantial further education and training.

The drive to develop competence based standards started in mainly manual and craft occupations where the practical requirements of employment were clear to see. Training in these occupational areas was dominated by traditional 'school based' approaches involving theoretical education combined with practical classes, often performed with out of date equipment and methods. The curriculum base of such programmes was clearly out of alignment with the rapidly changing needs of employment.

The conception of competence based standards aimed to reverse the traditional educational model based on 'inputs' (the curriculum) and traditional educational practice which generally attempt to approach academic education. The traditional curriculum defined what the teacher should teach. The change in competence approach is the movement towards a definition of what the student needs to learn in order to perform to the standards required in employment.

The instrument developed to enable this change is the concept of an occupational or educational 'standard (level)'. The standard elaborates the level of competence required to perform successfully in an occupation and that description is used, in turn, to develop a closely aligned curriculum.

4. **Training Needs Analysis TNA**

The first step to adapt labour competency approach to training in an enterprise is to conduct a Training Needs Analysis TNA to identify all jobs / occupations within the enterprise and priorities of the jobs to be analysed and its contents are identified in attempts to achieve job classifications.

5. **Occupational Areas**

The breakdown with the traditional trend of designing occupational descriptions at the level of job positions has fostered a new way of classifying and describing occupations according to occupational areas. These are general groups of similar occupations that share the same technical and scientific principles or that are carried out within the same sectoral environments.

We generally classify the labour market according to large occupational areas. The common factor in such areas is representing a group of occupations that are alike which, as such; imply similar environments, materials, relationships and knowledge.

6. **Occupational / Job Analysis**

Occupational analysis is generally carried out to identify the contents of occupations in attempts to achieve job classifications and establish different remuneration levels.

Analyzing the role of all jobs within an Enterprise is the initial step in a training matrix process required to identify training and assessment requirement for each job / role.

Nowadays, several occupational analysis methodologies have been improved. They seek to identify occupational contents and facilitate the description of the competencies required by a certain occupation. From that description, support has been given to many activities related to human resources management (selection, promotion, remuneration, training, certification, assessment).

7. **Occupational Competencies Approach to Education & Training and Impact to Productivity**

The adoption of a labour competency approach to training is undoubtedly related to productive transformations that have taken place since the eighties. As a result of the productive transformations that have taken place, most of the Enterprises have come to understand the need to prevail in the market by improving competitiveness. One of the key components of the strategy of competitiveness is the need to take the development of the human resources of the Enterprise as the starting point to compete in the market. Clearly, the development of the human resources of the Enterprise can be found in labour training as well as in human talent management.

The relationship between a competent workforce and the degree of competitiveness and productivity of an Enterprise was widely accepted and accordingly structuring of high standard training programmes became very essential. In this regard, the labour competency approach was sought of as an advantageous approach to set the characteristics and the objectives of structuring the training systems.

Some enterprises managed to measure specific cases to verify the impact of the occupational competencies approach to training to productivity by employing mathematical and statistical techniques to the economics and pay back of the training.

8. **Components of Competence Based Occupational Standards**

As different countries implemented competence based occupational standards, a number of different methods, techniques and formats were developed to express the standards. However, if we examine standards from many different sources we find that they all share a common pattern. Embedded in all competence based standards are <u>three components representing the three stages of implementation and which are the answers to three questions shown in the table below.</u>

The question:	The specification which answers the question:
<u>A. Occupational / Job Analysis</u> What does the student need to be able to do in employment?	Occupational / Job Analysis to achieve Occupational / Job Specifications
<u>B. Identification and Standardization of</u>	The learning specification (the curriculum and On-

Competencies What does the student need to learn to be effective in employment?	the-Job Training OJT programmes)
C. Competency Based Assessment and Certification How will we know what the student has learned and is able to do in employment?	The assessment tool and certification

This simple list of three questions and three components produces a competence based standard which has a close link to the needs of employment.

The important lesson for most countries has been that the design of education and training programmes must start with an Employment Specification – we cannot move directly to the learning specification and design the curriculum first. The employment specification can serve two functions. For new education and training programmes it is the starting point in programme design. For existing education and training system which is based on a curriculum and training programmes (a learning specification), the employment specification can be used to audit the content of the curriculum and training programmes to check that it is relevant to labour market needs.

This requires that the first step of any programme to develop competence based standards is to define the precise needs of employment by carrying out what is known as Occupational / Job Analysis. This must be done in close collaboration with the social partners – both employers and representatives of those employed – as well as other key stakeholders like education and economic ministries, educational planners and professional associations.

Typically, this will involve a labour market analysis, using a number of available methodologies, to identify what current practitioners are required to do and also to identify significant changes that may affect practice in the short to medium term. These needs are then expressed, typically, in 'outcome' statements – statements which describe the work activities of practitioners. From these statements, required actions are then identified and from this analysis a separate specification is developed (the learning specification) which defines how a person would learn how to perform the specific outcome.

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competencies required by a certain occupation. From that description, support has been given to many activities related to human resources management (selection, promotion, remuneration, training, certification, assessment).

B. **Identification and Standardization of Competencies**

It is the method or process followed to establish, from the basis of a labour activity, the competencies that are involved while performing such activity satisfactorily. Competencies are usually identified on the basis of the job's reality.

Once competencies have been identified, its description may be very useful to clear up the transactions between enterprises (employers), workers and educational entities (TVET Centres). Usually, when standardized systems are organized, a standardization procedure is developed so that the competency which is identified and described with a common procedure becomes a standard, i.e. a valid point of reference for enterprises (employers), workers and educational entities (TVET Centres).

There are different and varied methodologies to identify competencies. Among the most frequently used ones we may find: Functional Analysis, "Developing a Curriculum" method (DACUM) and Competency Based Training CBT

- **Functional Analysis**

  Functional analysis is a technique used to identify the labour competencies inherent in a productive function. Such function may be defined at the level of an occupational sector, an enterprise, a group of enterprises or a whole sector of production or services.

  The Main Function or Main Purpose is the starting point from which the functional map is developed. From such point the productive functions or services under study are successfully driven, with the logic of "what needs to be done to achieve this?" The logic of problem-solution is used to ask questions to find out what functions need to be performed in order for the previous function to be achieved i.e. each of the divided functions becomes a "solution" to solve the "problem" posed by the previous function.
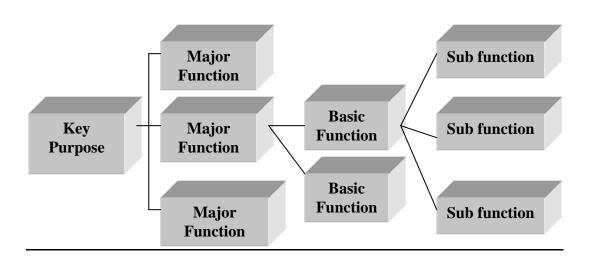
  The unit of competency is a group of productive functions identified in the functional analysis where such function can be carried out by one person. The unit of competency is formed by a group of elements of competency; it has a clear meaning in the work process and, therefore, it has value for the work itself. The unit not only refers to the functions that are directly related to the job's objective, it also includes any other requirement connected with health and safety, quality and relationships at work.

  The results of the functional analysis are graphically represented by **Functional Map** and which is a tree-like design (horizontally displayed) shows how the key purpose successively divided into the constituent functions.

  In fact, the tree branches are "causes" graphically linked to the left (or downwards, depending on how it is displayed) to their corresponding "consequences". If it is read from bottom to top (or from left to right), we find the answers to "how" a main function is carried out through

performing the basic functions that compose it. Conversely, from right to left, we find the answer to "what for" of each function, which is contained in the function of the immediately following level.

General Outline of a Functional Map

Functional analysis, just like any other methodology which analyses occupations, becomes the basis for the creation of not only competency standards, but also training programmes. However we should realize that Functional Analysis does not specify a curriculum, it merely states the outcomes of employment in a framework which educational specialists can understand and use as the first stage of curriculum design.

- **Developing a Curriculum (DACUM)**

DACUM (Developing a Curriculum) is an occupational analysis method aimed at the achievement of results that may be immediately applied to the development of training curricula. Many countries and organizations have recently worked on the design of its training programmes by taking DACUM as the starting point.

It is defined as a quick method to carry out occupational analysis at a low cost. It uses the technique of team work, with teams formed by personnel who have experience in the occupation that is the object of the analysis. To make a workshop that uses DACUM groups of five to twelve people are formed. They are guided by a facilitator and they are supposed to describe in a clear and precise way the knowledge and the "know how" involved in the job position.

The results of the functional analysis is usually expressed in the so-called DACUM Map where the job position is described in terms of the competencies and sub competencies as it requires e.g. a job for preparing meals is describes in the DACUM Map as:

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Competency A:        Prepare Meal
Sub competency A1: Bye food
Sub competency A1: Wash food
Sub competency A1: Cut food
Sub competency A1: Cook food, etc.
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At this point there may be a noticeable difference between the concept of competency that is used to carry out the functional analysis and the one used by DACUM. The latter considers that competency is the description of big tasks and, at the same time, it is the sum of a number of small tasks called sub competencies. The total amount of competencies makes up the description of the tasks involved in a certain job position. Conversely, functional analysis does not describe tasks; it identifies the results that are necessary to fulfil the key purpose.

The DACUM Map also includes the necessary knowledge, behaviours, conducts, equipment, tools, materials and the future development of a job position, as optional

The rules to describe Units / Modules and Elements of competency used by functional analysis are not explicitly applied by DACUM.

- **Competency Based Education & Training CBET**

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A third trend to create labour competency standards is the Competency Based Education & Training CBET in which the total curriculum is broken down into coherent parts known as modules or units and further down into elements or tasks, each of which can be separately learned, assessed and certificated.   In this modular curriculum design, the integration of competency standards with their different components of competency (modules / units / elements / tasks), evidence of performance, performance criteria, field of application and assessment guidelines is the basis for designing Competency Based Education & Training CBET curricula and Programmes.

Once the competency has been described and standardized, the design of <u>Competency Based Education & Training Frameworks and Curricula</u> for a particular job should be much more efficient and oriented towards the standard. This means that when training is geared to generate competencies that clearly correspond to existing standards, it will be much more efficient and will have a stronger impact than training that is totally unaware of the needs of the entrepreneurial sector.

In Competency Based Education & Training, it is not only necessary that training programmes are oriented to generate competencies by taking standards as a basis, but also that educational strategies are much more flexible than the traditionally employed ones. In this way, competency-based training also faces the challenge of facilitating entrance and re-entrance, thus turning the ideal of continuing training into a reality. Likewise, it is necessary that a greater involvement of the participant in his

training process is allowed so that he may decide on what he needs from training, the pace and the didactic (instruction / teaching) materials he will use, together with the required contents.

Some of the key competencies, those which are more required in the view of human resources management i.e. personal / behavioural / attitudes competencies are not generated by knowledge passed on with teaching materials but rather promoted through the learning and training at work location.

A competence based modular curricula has been used to structure vocational education and training in different countries for many years.

In conclusion the Functional Analysis is a functionally based methodology, the DACUM is an end result based methodology & CBET is a competency based methodology used as Occupational Competencies Approach to Training.

C. **Competency Based Assessment and Certification**

In order for a worker / trainer to carry out a standardized labor activity, he must be formally assessed and verified to prove that he is competent.

The certification of competencies refers to the formal recognition of the proved competency (thus, assessed and verified) of an individual in order for him to carry out a standardized labor activity.

The issue of a certificate implies that there has been a prior process of competency assessment. In a standardized system, the certificate is not a diploma that certifies prior studies. It is rather a proof of a verified competency, and it is obviously based on a well-defined standard. This offers much more transparency to standardized certification systems since it allows workers to know what is expected from them, employers to be aware of the competencies that are being required by their enterprise and training entities to be aided in their curriculum design process. The certificate is a guarantee of quality concerning what the worker is capable of doing and the competencies he / she have to do so.

9. **Capacity Building**

Capacity building is the development of the knowledge, skills and attitude of individuals in an organisation to their full capacity. It means investment made with the purpose of enhancing the ability of individuals to achieve their development goals.

10. **National Vocational Qualifications, Occupational Standards, Occupational Certification and Licensing**

The National Vocational Qualifications NVQ are the qualifications which assess someone's competence in a work situation and they are based on national occupational standards (levels). The NVQ is created mainly with the objective to promote and develop the proposals for integration of vocational training with the assessment and certification of the corresponding professional competencies.

As an example of the national occupational standards (levels), the Quality and Curriculum Authority (QCA) is the guardian of standards in education and training in England & Wales (The Scottish equivalent is SQ) and it is utilizing the following 4 occupational standards:

- **Level 1 (Foundation)** indicates an initial stage below the usual standard for work. The QCA definition of Level 1 is "competence in the performance of a range of varied work activities, most of which may be routine and predictable."

- **Level 2 (Intermediate)** People who work under supervisions or who work in teams are considered as 'Intermediate' or level 2. The QCA definition is "The QCA definition of Level 2 is competence in a significant range of varied work activities, performed in a variety of contexts. Some of the activities are complex or non-routine, and there is some individual responsibility or autonomy."

- **Level 3 (Advanced)** People at level 3 are employees who do not have the responsibility of managers, but do not work under supervision, and have the freedom to move about at work. The QCA definition is "competence in a broad range of varied work activities performed in a wide variety of contexts, most of which are complex and non-routine."

- **Level 4 (Management)** is for people who are responsible for organising people and production. QCA definition is "Competence in a broad range of complex, technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present".

When the areas of occupational performance are associated with different levels (standards) of competency and these are, at the same time, articulated in the existing educational system of a country, a National Qualification Framework is developed. Countries have recently defined these frameworks of reference in order to harmonise their employment policies, training and education. Furthermore, the introduction of these frameworks facilitates mobility and allows making the concept of continuing learning real.

The National Qualification Framework and the established National Vocational Qualifications and Occupational Standards will highly support the development of training programmes and assessment tools and finally lead to the Occupational Certification and Licensing. At such stage of development, every practitioner of any occupation has to obtain the license to practice his or her job. Hiring services from award and license bodies is also opted to at the stage of Occupational Certification and Licensing with a view to establish:

> - Accredit TVET Institutions and TVET Institutions of Competence
> - Certify Instructors / Trainers, Assessors & Verifiers
> - Certify test exams and assessments

11. **Competency Development Frameworks CDFs– Basic Principals – Module / Unit of Competency & Element of Competency (Task)**

In order to implement a structured process for assuring competency across an industrial company or vocational institution, Competency Development Frameworks CDFs have to be established, related to real activities conducted in the work place and designed to meet the Required Minimum Competency Standards (Levels).

Competency Development Frameworks can be understood to represent the language of performance in an organization, articulating both the expected outcomes of an individual's efforts and the manner in which these activities are carried out. The individual could be a company employee or apprentice / trainee within a TVET Institution.

In designing a framework, care should be taken that only measurable components are included. It is important to restrict the number of competencies required to be acquired for any particular role and arranging them into <u>Modules or Units of Competency</u> containing like (similar) topics to make the framework more flexible and accessible to the users (Modular arrangement). The framework should contain definitions and / or examples of each competency.

The Module or Unit of Competency is formed by a group of <u>Elements of Competency</u>; it has a clear meaning in the work process and, therefore, it has value for the work itself. The Module / Unit not only refer to the functions that are directly related to the job's objective, it also includes any other requirement connected with health and safety, quality and relationships at work.

<u>Element of Competency</u> includes the competencies required to be acquired by a person in his /her occupational environment. Therefore, it refers to an action, a behavior or a result that a worker needs to demonstrate and, thus, it is a <u>Task</u> that is carried out by one individual.

<u>The Element of competency includes the description of a Task that should be carried out by a workers / trainees in their occupational environment</u>. Therefore, it refers to an action that a worker needs to demonstrate and, thus, it is the ability to carry out a Task by an individual

Elements of competency are written in the form of a sentence, following the rule of beginning with a verb in the infinitive, preferably; then it describes the object on which the action is performed and, finally, though it is not compulsory in every case, it includes the condition of the action regarding the object e.g. 'Maintain control systems to keep the process flow and maintain the product according to specifications'.

VERB   +   OBJECT   +   CONDITION

A critical aspect of all frameworks is the degree of detail. If a framework is too general (containing only general statements), it will not provide enough guidance either to employees as to what is expected of them or to the assessors who have to assess the workforce against these terms. If, on the other hand, it is too detailed, the entire process becomes excessively bureaucratic and time-consuming and may lose credibility.

12. <u>Critical Tasks (Elements)</u>

All competencies must be demonstrated in accordance with the Health, Safety and Environmental Protection HSE Policy (Industrial Safety Policy) applied by the different sectors of industry and for each work location, where site / operation specific HSE-critical activities occur. The HSE-Critical Tasks or simply called <u>Critical Tasks</u> are defined as the tasks including key accountability for activities where incompetent actions by an individual could lead to serious injury, illness and fatality to individuals or significant loss and major damage either to the assets or the environment.

13. <u>Creation of Competency Development Frameworks CDFs</u>

Competency Development Frameworks CDFs can be developed in a number of ways. It is possible to draw on the competency lists with the support of the National Vocational

Qualifications (Egyptian Vocational Qualifications EVQs). The Competency Frameworks developed in this way are often linked with progression towards recognized qualifications.

Many organizations develop their competency development frameworks for their workforce and newly hired employees through an internal research programme, sometimes aided by advisers from an external consultancy or training provider. Methods of developing a framework range from importing an existing on-the-shelf package through to developing the entire thing from scratch. The best solution usually lies between these two extremes, namely internally generating a framework that builds in business relevance, but do this by customizing existing models that have already been widely used and have proved successful to your own requirements.

The overwhelming proportions of CDFs were designed in-house or in-house with consultants. A very small proportion used frameworks produced and made available by an external organization (for example a trade association or government body). Yet many of the subjects that were included in the framework fell under expected generic headings.

Many organizations develop CDFs with a view to managing performance and progression more effectively. However, many managers and individuals find it hard to use the frameworks to help achieve their goals and, therefore, the goals of the organization. The most common reasons for this is that people don't see the benefit of the framework and aren't trained adequately; there aren't clear links to what the business is aiming to achieve and many frameworks are a mix of different concepts which make them impractical.

The following activities can help to build the commitment of employees and managers towards effective use of the CDFs.

- Involving managers and employees in the design and implementation of the framework.
- Holding group briefings to explain the competency approach and the new framework.
- Providing training to managers about the use of competencies which deals with the practicalities of using the framework to assess and manage staff.
- Provide information and training to all employees, perhaps by producing a special leaflet or brochure to explain the new framework.
- Raise awareness by publicizing it in a staff newsletter or on the Intranet.

The main benefits of utilizing CDFs are:

- Employees have a set of objectives to work towards and are clear about how they are expected to perform their jobs
- Clear link between organizational and employees objectives
- Employee Career Development will become more effective
- The processes for managing employees performance are measurable and standardized across the boundaries of the organization
- Personal recruitment and appraisals are fair, more open and effective
- Training Needs Analysis TNA and training will be more effective

The CDF is developed in accordance to real activities conducted in the work place and should include all knowledge, skills and attitudes that workers / apprentices should acquire. Those are then translated into curriculum and actual teaching materials followed by developing appropriate assessment methods. The Managers / Directors of the TVET Institutions have a major role in this regard.

Criticisms of CDFs are attributed to using poor practice in development of competency frameworks or lack of understanding of competencies. Such criticisms do not challenge the need and usefulness of competency frameworks; they highlight the need for care and understanding when developing and implementing competency frameworks.

14. **Key Assessment Subjects & Duties**

The Competency Development Framework CDF for a specified discipline / profession includes selected list of Key Assessment Subjects describing duties and competencies that the industrial company's employees or vocational trainees (students) are expected to perform and acquire in their work assignments within the Company / Enterprise or the TVET Institution. The Key Assessment Subjects contain the following four sections:

- **Section A: Core Competencies**

    These are the most important specific technical competencies required to be acquired by a particular discipline as core competencies to carry out the roles covered by the Competency Framework.

- **Section B: Support Competencies**

    These are the specific technical competencies required to be acquired by a particular discipline from other disciplines' competencies to carry out the roles covered by the Competency Framework.

- **Section C: General Competencies**

    These are the general technical competencies required to be acquired by all disciplines during their training and development period.

- **Section D: Personal / Behavioural Competencies**

    These are the non technical competences required to be acquired by all disciplines during their training and development period.

The above Key Assessment Subjects are further broken down into a number of Modules / Units which further are broken down into number of Elements / Tasks outlining the actual things that employees / trainees will need to know about.

The National Vocational Qualifications and the Competency Frameworks give a clear indication to young professionals of what the industrial companies and vocational institutions expect to receive during their Performance Based Development Period in the company or the vocational training centre / institution. The Competency Framework also provides the framework for Monitoring & Evaluation M&E of the performance of the employees and support the effective development of direct hire and contracted staffs.

15. **Scales of Competency Standards (Levels)**

One of the main objectives and policies for different sectors of industry and TVET Institutions is to have a Competency-Assured Workforce and Trainees in accordance with agreed Competency Standards (Levels) and Performance Assessment Criteria.

Training will be based on the Competency Standards (Levels) already developed on a national basis and in use by the industrial and business associations and federations such as the 4 occupational standards used in the Quality and Curriculum Authority (QCA) in England & Wales.

In special cases, some sectors of industry and TVET Institutions which are not using the National Competency Standards (Levels) or not yet established the competency based training and assessment systems, can develop and establish their own systems, competency standards and Competency Development Frameworks CDFs using their own staff or via hiring the services of specialized training providers.

In order to determine the Competency Standard (Level) Required which defines the standard (level) of competency that is required for each element of the job , the enterprise or TVET Centre / Institute has to use a certain type of <u>Scales of Competency Standards (Levels)</u> defining the <u>Minimum Competency Levels Required LR</u>.

The following are the 4 Levels used in the Scales of Competency Standards (Levels) used when applying Competency Based Training CBT:

<u>Level 1: Awareness (A)</u>

- Knows the basic, has awareness and can <u>work only under supervision</u>.
- Understand on basic level, identify, list, recognize, ask sensibly, know where to look for information and requires supervision

<u>Level 2: Knowledge (K)</u>

- Knows how to do and can work <u>independently without supervision</u>.
- Describe, participate, contribute, explain, work with guidelines, and know when to refer to guidance

<u>Level 3: Skill (S)</u>

- Skilled and able to train and coach others
- Plan and analyze, take accountability for own work area, deal with range of activities and tasks, find ways to increase own and others' contribution, provide guidance and coaching to others, begin to take an external perspective and demonstrate competence to others

<u>Level 4: Mastery (M)</u>

- Expert and provide training and coaching to others
- Adapt, create, innovate, originate, conduct troubleshooting, provide guidance and coaching to others (as expert), challenges others thinking, define new standards, take a broad long term perspective, anticipate and plan ahead

16. <u>Performance Assessment Criteria</u>

Once elements of competency (tasks) have been defined, they need to be specified in terms of the knowledge required, the expected result, the quality that such result is supposed to show i.e. minimum competency level required and the evidence that proves competency.

The Performance Assessment Criteria is a description of the expected result of each element of competency and the assessment statement of the quality to be achieved. In this way the performance criteria support the design of assessment material, specify what has been done and its quality and establish whether the worker can reach the result described by the element of competency or not i.e. is , or is not yet, competent.

The Internal Assessor within an Enterprise or TVET Institution is generally assessing the different competencies acquired by the worker / trainer against the established standards and evidences provided. This assessment is either verified by the Enterprise or TVET Institution via appointment of an External Verifier from a recognized international body or Internal Verifier from the Enterprise or TVET Institution.

The assurance process (assessment & verification) assesses demonstrated performance for all acquired competencies including HSE–critical ones (critical tasks) against specified competency standards and performance assessment criteria. The success criteria for the Basic Training (Off-the-Job Training) are different from On-the-Job Training OJT. In the Basic Training, the worker / trainee is competent when he achieve a certain percentage while in OJT, he is competent when he passes all the tasks (or the critical tasks) included in the Competency Development Framework.

17. Labour Qualifications

- Units / Modules of competency constitute units / modules with an evident meaning and value at work. When different units / modules are grouped with a clear occupational set up of the sector under analysis and with a well-defined level of competency, labour qualifications begin to take shape.
- Qualifications are not names for job positions. They are groups of competencies that may be taken as reference of job performance at the organization and also for the design of training programmes. Each job position will have its units / modules of competency well specified and certified for competent performance to take place. A labour qualification can have units / modules that may be applicable to more than one job; thus, favouring labour mobility.
- A labour qualification, at a certain specified level of performance, is composed of several units / modules of competency. Units / Modules of competency are further broken down into a number of Elements and these are in turn specified in terms of performance, application range, evidence of knowledge and evidence of performance.

18. TVET Institution Organizational Aspects

The Coach in a TVET Institution is the person who provides training to an individual in order to facilitate his learning experience. The coach's main role is to plan activities that will help the individual to grow and develop in the workplace. The coach helps the individual attain the desired outcome and then assess his progress. He / She may be an Instructor / Trainer / Teacher or First Line Supervisor.

Within In-company TVET Centre, the coach is the Instructor supported by the First Line Supervisor (the person's direct supervisor for whom he / she will be reporting when he / she fills in the target post). Within Inter-company TVET Centre, the coach is the Instructor.

Within In-company TVET Centre, the Instructor and the First Line Supervisor are generally nominated by the Company as the Internal Assessor who assesses the individual's technical, operational and behavioural competencies against the established standards either for the off-the-job tasks or the on-the-job tasks. This assessment is verified by the Company via the appointment of either an Internal Verifier from the Company or External Verifier from a recognized international body.

Within Inter-company TVET Centre, the Instructor is the Internal Assessor who assesses the individual's technical, operational and behavioural competencies against the established standards for both the off-the-job and on-the-job tasks. This assessment is

verified by the TVET Centre via the appointment of either an <u>Internal Verifier</u> from the TVET Centre or <u>External Verifier</u> from a recognized international body.

For both In-company and Inter-company TVET Centres, the Internal / External Verifier assess <u>some</u> selected competencies against their defined standards, highlight gaps (shortfalls) in performance and recommend remedial actions. The selected tasks generally consist of 30% of the full list of tasks.

The assurance process assesses demonstrated performance for all competencies including HSE–critical ones (critical tasks) against specified competency standards (levels) and overall criteria. The outcome of the assessment, generally, includes the following results:

- **Tasks identified by the Assessor which do not meet the competency standard level stipulated by the company for their In-company TVET Centre or the Inter-company TVET Centre. These tasks are generally called Gaps (Shortfalls).**
- **Overall assessment score based on the assessment of all competencies included in the competency framework for a particular individual.**

Within In-company TVET & Inter-company TVET Centres, the <u>Assessment Criteria</u> is defined in the following way:

- **For each Task, either the Individual is meeting the objective of the Task i.e. 'Competent' or not meeting the objective of the Task i.e. 'Not Yet Competent' and he has to be re-trained to close and eliminate his gap.**
- **For the full Competency Framework, the Individual is meeting the Passing Group Score e.g. 80% of the full list of tasks and thus he / she is considered to be 'Competent'.**
- **For the full Competency Framework, the Individual is not meeting the Minimum Group Score e.g. 60% of the full list of tasks and thus he / she is considered to be Incompetent and has to be 'Re-deployed'.**
- **For the full Competency Framework, the individual scoring between the Minimum and Passing Group Scores is considered to be 'Not Yet Competent' and he has to be re-trained to close and eliminate his gaps.**
- **Some companies request that their employees and trainees prove to be competent for all tasks included in the Competency Framework, to meet the passing criteria.**
- **Other companies request that their employees and trainees should prove to be competent for all tasks included in the list of Critical Tasks, to meet the passing criteria.**

19. <u>Assessment Evidences</u>

Assessed employees / trainees have to present Evidences including the necessary knowledge and comprehension to prove that the performance has effectively taken place and that they are competent for each task (element) of their Competency Development Framework. . It may be reflected in theoretical knowledge and principles with a scientific basis that workers are supposed to master, as well as in their cognitive skills regarding the element of competency to which they belong. Evidences may be one of the following:

- **Observation at Work Location (O): It is direct evidence has to do with the technique employed in the performance of a competency and it is verified through observation.**
- **Work Product (P): Product evidence is real proofs, observable and tangible, of the consequences of performance.**

- **Answer to a Question (Q): It is evidence which is verified through an answer to a question.**

20. **Assessment Data**

   Assessment is generally carried out on the basis of a group of data extracted from the Competency Development Framework and includes:

   - **A list of the training units / modules and associated elements / tasks to be assessed**
   - **Action statements that indicate the competency level for each element / task and evidences to be provided**
   - **The performance criteria and competencies to be acquired for each element / task**

21. **Competency Assurance Management System CAMS**

   The Competency Assurance Management System CAMS is an established quality control and assurance system identifying the methods and procedures followed up to ensure that employees / apprentices / trainees within enterprises, technical vocational institutes, centres and schools have the awareness, skill and knowledge to perform at work adequately and safely. Such system is developed to ensure that all Trainees / Employees and Teams can perform all tasks including Health, Safety and Environmental Protection HSE Critical Tasks effectively to the required competency level (standard) at work location through the training and development of the staff.

22. **Trainers, Assessors and Verifiers**

   Coaches / Trainers / Instructors / Teachers need to be competent in addressing the courses and training programmes at class and workplace (Of-the-Job and On-the-Job Training). They will need to be trained in coaching techniques and, once approved to be competent in training, will be registered as approved Trainers.

   Assessors need to be competent in carrying out assessments in class and at the workplace. They will need training in assessment methods and, once assessed as competent in assessment, will be registered as approved Assessors.

   Verifiers from industrial companies and TVET Institutions also need to have operational and technical experiences in the areas being assessed in order to support the Assessors and to ensure that the standards are being maintained. Like Assessors, Verifiers will need training in verification and quality assurance to assist them to carry out their role.

   As a transfer of training technology, each Company / Enterprise and TVET Institution should establish and develop a 'Train the Trainer Programme' covering concerned training staff and including:

   - **Train the Trainer Course**
   - **Train the Assessor Course**
   - **Train the Verifier Course**
   - **Competency Based Training CBT Course**
   - **Quality Assurance Management System Course**

23. **Evaluation of Assessment Results & Specific Gaps Elimination Programme SGEP**

As essential part of the first assessment process, a judgement should be made of evidence presented for each task within the competency framework and which is performed against the required minimum competency level. A worker or trainee either meets the standard or does not i.e. he / she is either '<u>Competent</u>' or '<u>Not Yet Competent</u>'.

For each <u>Not Yet Competent</u> worker or trainee, the <u>Not Yet Competent Tasks and Training Needs</u> are identified and a <u>Specific Gap Elimination Programme SGEP</u> is developed highlighting the <u>Gaps or Shortfalls</u> for this particular worker or trainee and the re-training programme required to re-train, close and eliminate his / her gaps.

After the completion of the SGEP, the worker or trainee is re-assessed, re-verified and in case that the required standards has not been met and he / she proved to be again <u>Not Yet Competent</u>, he / she has to be again trained and subjected to a third assessment / verification.

If the worker or trainee is still assessed as <u>Not Yet Competent</u> following the third assessment / verification, he / she should be re-deployed or his / her services terminated in case that no redeployment opportunities exist.

The above type of assessment is referred to as <u>Continuous Assessment</u> and it is an assessment and verification tool supporting the process for continuing TVET.

24. **Training & Assessment Matrix Process - Process Flow Chart**

The training & assessment matrix process focuses on the total scope of a job and establishes the skills and knowledge required to be proficient as well as establishes the competency development framework, training path (roadmap) and assessment procedures that are required to ensure competency. This provides a consistent approach to training and assessment with a view to ensure that existing employees, new hires, trainees as well as managers know the training and assessment requirement for each job / role.

The training matrix process is especially effective when designing training that is primarily technical in nature and it is outlined in the following Procedures and Process Flow Chart:

A. **Training Needs Analysis TNA**

Identify all jobs / occupations within an enterprise and priorities of jobs to be analysed

B. **Job / Occupation Analysis**

For certain job(s), establish a Panel of Experts consisting of a group of Subject Matter Experts and top Trainers / Coaches / Assessors / Verifiers from the enterprise who have a high level of understanding of the knowledge and skills required by this particular job(s) as well as a qualified and certified CBET Expert / Consultant (Facilitator).

The panel will collectively and cooperatively review the job description and determine the appropriate manuals or documents to be used as reference material during the analysis. They will closely review the work tasks associated with the job(s) and identify the awareness, knowledge, skills and attitudes required to be included in the Competency Development Framework(s) of the selected particular job(s).

C. **Identification of Competencies**

As a result of the job / occupational analysis, detailed competencies complying with the duties of the job / occupation is identified in a list of general areas of competencies called Units / Modules and associated units of work called Elements / Tasks for each duty .

Brainstorming techniques are used to obtain the collective expertise and consensus of the committee. As the Panel determines each Element / Task, it is written on a chart so as when the chart is completed, the profile of the tasks performed by successful workers in the occupation is concluded.

D. **Competency Development Framework CDF**

The competency developed framework is created in accordance to real activities conducted in the work place and includes a cascade of measurable Units / Modules and Elements / Tasks containing all awareness, knowledge, skills and attitudes that workers should acquire at a specified competency level.

It is important to restrict the number of competencies required to be acquired for any particular job and arranging them into Units / Modules containing like topics and having definite objectives with a view to make the Competency Development Framework more flexible and accessible to the users (Modular arrangement).

E. **Selection of Critical Tasks**

Out of the group of Tasks (Elements) contained in the Competency Development Framework, the HSE-Critical Tasks or simply called Critical Tasks are identified and selected. These are the tasks including key accountability for activities where incompetent actions by an individual could lead to serious injury, illness and fatality to individuals or significant loss and major damage either to the assets or the environment.

F. **Development of Curriculum and Training Programmes**

After the preparation of the competency development frameworks, they are then translated into curriculum, training programmes and actual teaching materials.

The design of Modular Based Competency Frameworks requires emphasis on both theoretical and practical exercises. Accordingly the panel will identify the Minimum Competency Level Required LR for each element / task and type of training required i.e. Instructor Lead Training ILE (Basic or Of-the-Job Training) or Work Based Training (On-the-Job Training OJT) in accordance to the objectives of each unit / module.

The list of skills and knowledge developed by the panel are then mapped to the list of available training courses and objectives, thereby establishing a baseline of the Basic Training (Of-the-Job Training) identifying which training course additional to the available ones are required.

For each element / task, the Evidences to be provided by the worker / trainee have to be identified by the panel.

Based on the assigned Minimum Competency Level Required LR, the panel projects the agenda and develop the time per unit / module.

G. Learning, Training and Collecting Evidences

The developed Curriculum, Training Programmes, Teaching Materials as well as the Competency Development Frameworks are all utilized to conduct the off-the-job and the on-the-job training.

During the implementation of both off-the-job and on-the-job training, the trainees / workers are requested to collect evidences to prove that they are competent at the time of assessment.

H. Assessment & Verification

The development of Curriculum and Training Programmes should be followed by developing an Assessment and Verification System and Performance Criteria appropriate to be used by managers for trainee / worker performance evaluations, gap analysis and re-training.

According to Performance Criteria, if the worker / trainee proved to have no gaps, he / she is considered to be 'Competent' and should be certified and fill in the established Target Post.

If the worker / trainee exceed the number of gaps allowed by the Performance Criteria, he / she should be redeployed or his services terminated.

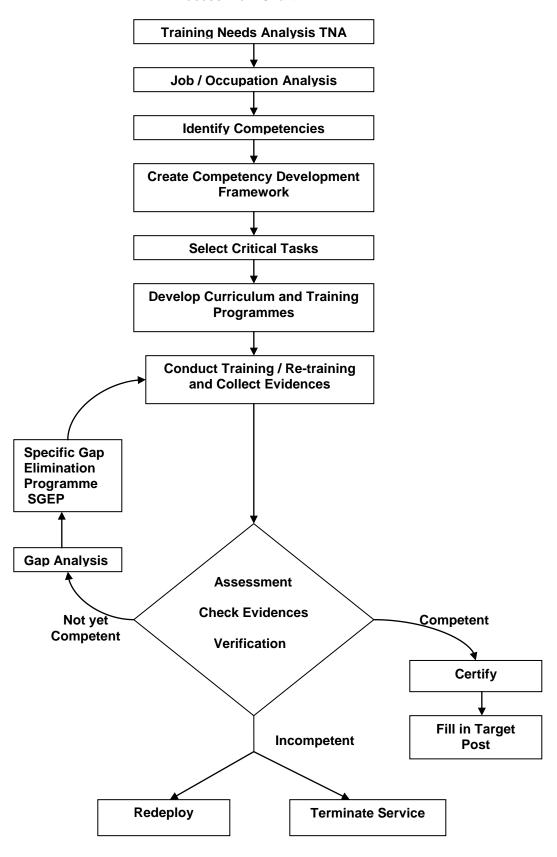### I. Gaps Analysis & Specific Gaps Elimination Programme SGEP

If the worker / trainee have gaps more than the ones allowed by the Performance Criteria, he / she is considered as 'Not Yet Competent' and should be retrained by analysing of his / her gaps, developing what is known as Specific Gaps Elimination Programme SGEP and re-trained to eliminate and close his gaps.

J. Retraining

The 'Not Yet Competent' worker / trainee is to be re-trained according to his / her SGEP and to be followed by a second assessment, verification and evaluation of results. If gaps are closed and eliminated, he / she is considered to be 'Competent' and should be certified and fill in the established Target Post.

If gaps still exist, a Gap Analysis is carried out, second SGEP is developed, re-training is conducted, and third assessment and verification carried out and evaluated. Based on the assessment, if gaps are closed and eliminated, he / she is considered to be 'Competent' and should be certified and fill in the established Target Post. If gaps still exist, he / she should be redeployed or his services terminated.

Process Flow Chart

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┌─────────────────────────────────────┐
│     Training Needs Analysis TNA      │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│       Job / Occupation Analysis      │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│        Identify Competencies         │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│    Create Competency Development     │
│             Framework                │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│         Select Critical Tasks        │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│   Develop Curriculum and Training    │
│             Programmes               │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│   Conduct Training / Re-training     │
│       and Collect Evidences          │
└─────────────────────────────────────┘
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Specific Gap Elimination Programme SGEP

Gap Analysis

Not yet Competent

Assessment

Check Evidences

Verification

Competent

Incompetent

Certify

Fill in Target Post

Redeploy

Terminate Service

25. <u>Advantages of Competency Based Education & Training CBET for Workers</u>

Persons who are in favour of CBET promote it as a way to improve the correspondence between education/training and workplace requirements. Opponents to CBET consider it excessively complicated, narrow, and rigid, as well as theoretically, empirically, and pedagogically unsound.

Applying Competency Based Education and Training CBET to workers has the following advantages:

A. CBET implies an advantage for workers since it recognises acquired competencies even during their experience and it does not limit the description of their labour skills to whatever their academic life was.
B. CBET focuses on providing certification with the same value as academic degrees, thus destroying the concept of first-class and second-class education.
C. In CBET, workers know what is expected from them and accordingly they can be more efficient and motivated than those which are appointed to a position but are not made aware of the <u>larger framework and the organisation's functions</u>.
D. In CBET, workers will take part in training plans that are much more directed to the improvement of their performance and the assessments will be more meaningful since they will contribute to the organisation's objectives (Performance Based Training, Assessment & Verification).
E. CBET develops wide-range of Core, Support, General and Interpersonal competencies that may be applied in a variety of labour situations. In this sense, CBET frameworks involve competencies common for different labour activities. These competencies are not exclusive of one job post but rather they can be owned and exercised in different job positions
F. CBET contributes to the fact that workers can take advantage of their skills in a wider range of employment options. This is how training and certification support employability. Additionally, CBET privileges the development of abilities associated with understanding, formulating of what is being done and, therefore, it facilitates learning and re-adaptation. Its focus is more open and inclusive in terms of application at work.
G. CBET goes beyond the enjoyable attention to the development of physical skills since it has a conceptual basis and particularly because it focuses on results and the competencies behind them.
H. Compensation mechanisms may be easily related at the level of competency within CBET and therefore be clear for the worker and the enterprise. The chances of labor mobility may be better judged when the competencies required by other departments in the enterprise are known. It is possible that some of the competencies associated with certain areas of performance be completely transferable to other areas. If such competencies are recognized and certified, promotion decisions can be sped up and it may motivate others who wish to carry out training actions in order to become eligible for those new positions.
I. The methodology of CBET is a very powerful, efficient, and innovative approach to job / occupational analysis and produces superior results for all occupational levels. It has proven to be a very effective method of quickly determining, at relatively low cost, the competencies or tasks that must be performed by persons employed in a given job or occupational area.
J. It enables changes to be rapidly introduced into programmes to meet emerging technological and other work requirements – new modules can be introduced and existing modules can be changed;

K. Modules are more effective in meeting the needs of adult learners who may not have the time or motivation to engage in a long period of full time education;
L. Modules can be taken separately at students' preferred time and pace to enable them to 'accumulate' a qualification;
M. Modules can be used flexibly to update employed people as new demands emerge.
N. Overall, modules provide a more flexible base for curriculum design and can also be combined with the competence based standards approach in which the standard is converted into a learning module.

The following are some of the general questions and debates surrounding CBET:

A. Does the CBET give employers what they want?
B. Does the focusing of CBET on qualifications related to the required performance in the workplace are suitable for the workforce and not confusing them?
C. Does the focusing of CBET on qualifications outweigh its costs?
D. To what extent the curriculum developed by CBET methodology is being driven by government, employers, vocational or higher education institutions?

26. <u>Advantages of Competency Based Education & Training CBET for Employers</u>

Employers (Enterprises) have begun to admit that their main source of differentiation and competitiveness is their workforce. Each day there appear more experiences of Enterprises that direct their competitive efforts to strengthening their human assets. Generating spaces that promote innovation, Continuing TVET and Lifelong Learning are objectives that are supported by Competency Based Education and Training CBET processes aimed at developing labour competencies. Enterprises recognized that CBET has the following advantages:

A. CBET facilitates personnel selection greatly, since the selection may be founded on proved skills and no longer on diplomas. The selection is also based on the new lines in terms of incorporating behaviour competencies in the competency based frameworks
B. The traditional way of initiating positions through simplified and often inoperative Job Descriptions proved to be ineffective and can be highly improved by using concepts of areas of competencies and standardization and thus avoiding creating unnecessary differences among workers who filing the same jobs or workers who interact at similar levels.
C. Training of workers is more easily identified and provided when mechanisms of competency based assessment are applied on them. Such mechanisms facilitate the identification of the competencies to be developed in each case, and the associated training actions as well as the competencies that are considered as gaps, and the associated re-training actions. In this way the performance progress of trainees and workers are properly Monitored and Evaluated M&E.
D. Some enterprises, that have labour competency systems, have managed to relate their remuneration, incentive and compensation policies, mechanisms and schemes to the Competency Frameworks. In this regard, some enterprises belief that a certificate of competency should directly allow its bearer to receive an additional compensation while other enterprises on the contrary do not implement competency based training systems to avoid argument on such remuneration / incentive / compensation.

Some enterprises managed to measure specific cases to verify the impact of the competency based training and development in productivity by employing mathematical and statistical techniques to the economics and pay back of the training.

27. Advantages of Competency Based Assessment

Competency-based assessment is not a set of examinations as the traditional assessment; it is the basis for certification of competency and it is carried out as a process in order to collect evidence about the performance and knowledge of a person with respect to a labor competency standard. Thus it becomes a very valuable diagnostic instrument both for the worker and the employer.

Traditional Assessment systems usually have some or all of the following characteristics:

A. Assessment associated to a course or programme
B. Success criteria are based on marking scales
C. Evidences (Questions, Products & Observations) are not required
D. It is done within limited periods of time

On the other hand, labor Competency Based Assessment is defined as a process with the following characteristics:

A. Setting of Tasks to be performed and Competencies to be acquired
B. Setting objective assessment by identifying competency standards (levels)
C. Define evidences to be provided to prove competency
D. Comparison of Evidences with competencies to be acquired
E. Define Results expected to be achieved by the assessed worker / trainee (Competent, Not Yet Competent & Incompetent)
F. Setting performance criteria that provide details of minimum competency level required, required evidences and achieved results
G. Assessment is made on how the worker / trainee is actually performing in real working situations
H. It is done on continuous basis assessment and not in a predetermined period of time
I. It is not subject to the completion of a specific training action
J. It includes the recognition of acquired competencies as a result of labor experience i.e. worker are continuously assessed, gaps identified and eliminated
K. It is a tool for the orientation of subsequent learning of the worker; as such, it plays an important role in the development of skills and abilities of the ones assessed
L. It is the basis for the certification of labor competency of workers