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# Competency Requirements for Education and Training Providers for Meteorological, Hydrological, and Climate Services

**WMO**

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# Introduction

The organizational training function within a National Meteorological and Hydrological Service (NMHS) or related services might be accomplished by a variety of skilled personnel, including training managers, trainers, training developers, and training support staff. Personnel in third-party organizations (e.g. universities, international and regional institutions and centres, and private-sector companies) and other training providers might also fulfil education and training roles for these services.

This document sets out a competency framework for personnel involved in training, but it is not necessary that each person has the full set of competencies. However, within the following application conditions, which will be different for each organization, it is expected that any institution providing education and training services to current and future meteorologists and hydrologists will have staff somewhere within the organization who together cover all the competencies.

**A.** The organizational context, priorities and stakeholder requirements.

**B.** The way in which internal and external training providers are used.

**C.** The available resources (financial, human, technological, and facilities) and capabilities, and organisational structures, policies and procedures.

**D.** National and institutional legislation, rules and procedures.

The Performance Criteria and Knowledge Requirements that support the competencies should be customized based on the particular context of an organization. However the general criteria and requirements provided here will apply in most circumstances.

## *Competencies*

**I.** Analyse the organizational context and manage the training processes.

**II.** Identify learning needs and specify learning outcomes.

**III.** Determine a learning solution.

**IV.** Design learning activities and produce learning resources.

**V.** Deliver training and manage the learning experience.

**VI.** Assess learning and evaluate the training process.

# Competency I: Analyse the organizational context and manage the training processes

**Competency description:**
The organizational context is analysed and training plans, policies, and processes are developed and monitored for effectiveness.

## *Performance criteria*

- Analyse the current and evolving organizational and learning contexts, taking into account (a) organizational requirements, (b) how resources are made available and applied, (c) how strategic training plans are developed, and (d) how training procedures are implemented to comply with training plans, policies, and processes.

- Develop and implement a strategic training plan.

- Implement training procedures in accordance with training plans, policies, and processes.

- Monitor and update training plans, policies and processes to meet evolving needs and technological advances.

## *Knowledge requirements*

Able to understand, explain and/or critically evaluate:

- Factors causing change within an organization.

- Role of plans, policies and processes in supporting organizational change.

- Technologies required to support training.

- Role of quality assurance, financial management and promotion in managing the training process.

- Organizational, technological, and research trends affecting the provision of training.

## *Personnel who should demonstrate competency*

- Senior staff who have overall responsibility for training.

- Training managers.

- Trainers who would benefit from having some awareness of the context in which they are operating.

- People who make decisions about overall Human Resource development strategies.

# Competency II: Identify learning needs and specify learning outcomes

> ***Competency description:***
> A systematic approach is used to identify organizational and/or individual learning needs which are then specified in terms of a set of learning outcomes.

## *Performance criteria*

- Apply a systematic approach to specifying job competencies and performing learning needs analysis.

- Base the identification of learning needs on job tasks or the existing competency framework.

- Identify organizational and/or individual performance gaps that are due to learning deficits.

- Specify learning needs that take account of organizational and individual requirements, the views of stakeholders and external factors.

- Set learning outcomes in collaboration with stakeholders such that, if met, learners will be able to perform the job at the required level.

## *Knowledge requirements*

Able to understand, explain and/or critically evaluate:

- Why learning needs occur and the benefits of learning needs analysis.

- Sources of performance gaps not related to knowledge, skills or behaviour (organization, motivation, management, tools, procedures).

- How to carry out competency definition and learning needs analysis.

- Sources of data and techniques used to identify learning needs.

- Ways of classifying learning outcomes.

## *Personnel who should demonstrate competency*

- Training managers.

- Trainers who would benefit from having some awareness of how learning needs are identified within their organization.

- People responsible for delivering services within an organization if they carry out their own learning needs analysis before seeking the assistance of the learning professionals.

# Competency III: Determine a learning solution

> ### *Competency description:*
> The learning solution is determined and a plan is prepared for implementing the chosen solution.

## *Performance criteria*
- Assess learning solutions in terms of costs, organizational and learner characteristics, resource implications and the extent to which they satisfy all the required learning outcomes.
- Choose a learning solution that meets requirements and fits constraints.
- Consider a wide range of potential solutions, including using a mixture of formal, semi-formal and informal learning methods.
- Prepare a plan to implement the chosen solution, including timeframe, costs, location and technology, personnel, targeted learners, and evaluation criteria.

## *Knowledge requirements*
Able to understand, explain and/or critically evaluate:
- How the nature of the learning outcomes and organizational requirements help determine a learning solution.
- Types of formal, semi-formal and informal learning methods that might form part of a learning solution.
- Strengths, weaknesses, and appropriate uses of learning methods that form parts of a learning solution.
- Key components of an implementation plan.

## *Personnel who should demonstrate competency*
- Senior trainers.
- Instructional designers or other education specialists.
- Trainers who would benefit from an awareness of types of learning solutions and the factors taken into account in choosing solutions.

# Competency IV: Design and develop learning activities and resources

**Competency description:**

The design and development of learning activities and resources are grounded on evidence-based learning theory, support the learning process and address the specified learning outcomes.

## Performance criteria

- Design learning activities based on established instructional theory and the characteristics of learners in the workplace.

- Take account of the strengths and limitations of the learning activities that will be part of the learning experience.

- Use learning activities that include authentic tasks, build upon the prior knowledge of learners and provide opportunities for practicing the required performance.

- Prepare presentations and learning resources.

- Choose technology and software required for learning solutions.

- Follow a structured development process when preparing learning resources.

## Knowledge requirements

Able to understand, explain and/or critically evaluate:

- Characteristics of learners in the workplace and various categorisations of learning styles.

- Characteristics of trainer-centred and learner-centred instruction.

- How to plan a learning session and the sequencing of learning.

- Instructional strategies and applications of instructional theory.

- Strengths and limitations of various learning methods.

- How to design presentations, slides and other learning resources.

- How to develop self-paced learning resources.

- Development processes for instructional resources.

- Use of software packages and technology.

- How people acquire knowledge and build skills.

## Personnel who should demonstrate competency

- Senior trainers who lead the design process.

- Instructional designers or other education specialists.

- Trainers who would benefit from an awareness of the issues related to instructional design.

# Competency V: Deliver training and manage the learning experience

**Competency description:**

Classroom and/or distance learning courses are delivered in an environment that fosters and sustains learning.

## Performance criteria

- Create an environment conducive to learning.

- Ensure learning activities are engaging and effective.

- Clearly communicate the purpose and expected outcomes of learning activities.

- Apply technologies that aid the learning process.

- Give feedback and manage and mitigate disruptions to learning.

## Knowledge requirements

Able to understand, explain and/or critically evaluate:

- What preparation and decisions need to happen before a learning event.

- How to create an environment that supports learning.

- How to develop mutual trust and respect between trainers and learners.

- How to give presentations and conduct learning exercises.

- How to listen, question and give feedback.

- How to deal with conflict.

## Personnel who should demonstrate competency

- All trainers and training managers.

# Competency VI: Assess learning and evaluate the learning process

> ### *Competency description:*
> Learning is assessed against the agreed learning outcomes and training activities, events and programmes are monitored and evaluated as a basis for improving learning processes.

## *Performance criteria*

- Provide clear assessment policies and guidelines.
- Use formative assessment to promote deep learning.
- Assess learning against specified performance outcomes.
- Collate, analyse and use data on all aspects of the training.
- Evaluate training at the required level using established models.
- Improve training based on the results of evaluation.

## *Knowledge requirements*

Able to understand, explain and/or critically evaluate:

- Purposes and characteristics of assessment and evaluation.
- Advantages and limitations of assessment strategies.
- How to design good assessment items.
- Application of the Kirkpatrick Model and/or other models of evaluation.
- How to conduct the evaluation process.
- How to evaluate a training department and training programmes.

## *Personnel who should demonstrate competency*

- Training managers and senior trainers.
- Trainers involved in assessment procedures.
- Managers of staff identified as having a learning need.
- HR personnel.

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