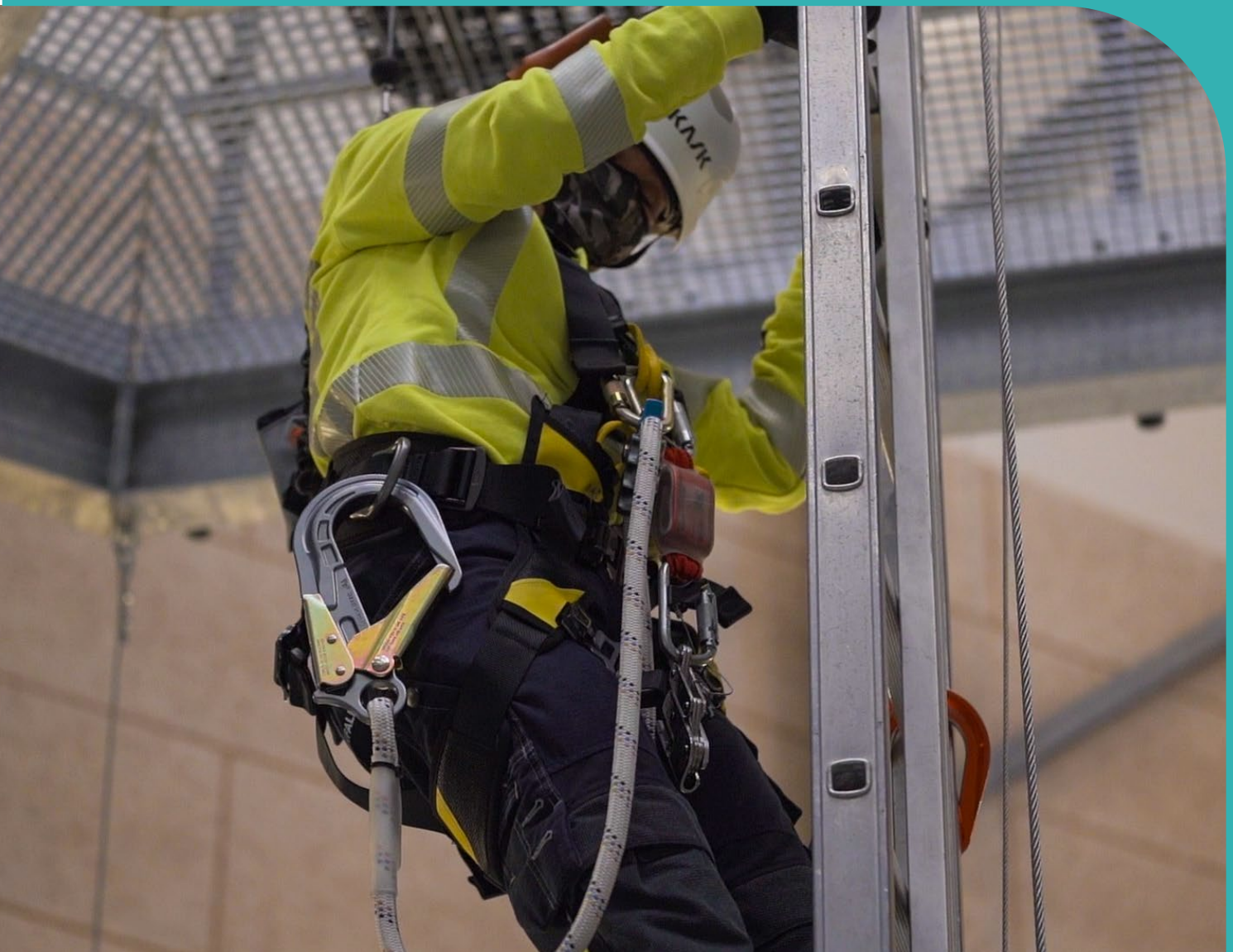




Requirements for Training

V14

Publication date: 4 December 2023





CONTENTS

1.	LIST OF ABBREVIATIONS	3
2.	TERMS AND DEFINITIONS.....	3
3.	CHANGE LOG – REVISION 14	4
4.	INTRODUCTION	5
5.	THE CERTIFICATION PROCESS	5
6.	SUPPORTING PROCESS	6
6.1	Organisation, Roles and Responsibilities	6
6.2	Documentation and Training Records	7
6.3	Risk Assessment, Non-Conformities and Incident Reporting	8
7.	EQUIPMENT AND PHYSICAL RESOURCES	9
7.1	General Requirements for Equipment and Physical Resources	9
7.2	Training Site Settings	10
8.	INSTRUCTOR QUALIFICATIONS	13
9.	TRAINING AND ASSESSMENT	17
9.1	General Requirements of Training	17
9.2	Course Participant Prerequisites	18
9.3	Contact Time and Instructor-to-Course Participant Ratios	18
9.4	Participant Performance Assessment	19
	ANNEX 1 - PERFORMANCE ASSESSMENT FORM.....	21
	ANNEX 2 - MEDICAL SELF-ASSESSMENT FORM	22
	ANNEX 3 - INCIDENT REPORTING AND ROOT CASE ANALYSIS	23
	ANNEX 4 - GWO TAXONOMY FRAMEWORK	27



1. LIST OF ABBREVIATIONS

GWO	Global Wind Organisation
HSE	Health and Safety Executive (UK)
ISO	International Standards Organisation
NCR	Non-Conformity Report
OSHA	Occupational Safety and Health Administration (USA)
PPE	Personal Protective Equipment
QMS	Quality Management System
RCA	Root Cause Analysis
WTG	Wind Turbine Generator

2. TERMS AND DEFINITIONS

Term	Definition
Can	Indicates a possibility or a capability.
May	Indicates a permission.
Must	For clarity where the word 'must' is used in this standard it shall have the same meaning as 'shall'.
Non-Conformity	A failure to do any of the following; meet a requirement, recognise and define a problem; remedy this problem, determine its cause; or take appropriate action to prevent it happening again.
Shall	Verbal form used to indicate requirements strictly to be followed in order to conform to this training standard and from which no deviation is permitted.
Should	Verbal form used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required.
WINDA	GWO's database of training records, allowing unique and digital verification of training.
WINDA ID	A unique identification code attributed to a course participant.



WINDA Record A record of training uploaded to a course participant's WINDA ID. May in colloquial English be referred to as a person's GWO training certificate or training validity.

3. CHANGE LOG – REVISION 14

Amendment date	Version	Approved by & date	
December 4 th 2023	14	BoD, 9 th Nov, 2023	Description of changes
<ul style="list-style-type: none"> Version changed to V14 Section 5 Replaced "GWO has an annual licensing fee associated with each certified Fixed and Mobile training site registered independently in WINDA. This fee grants access to WINDA, appearance of fixed training sites on the interactive map of Training Providers and the right to use our logo" by: <p>"GWO has an annual licensing fee associated with each fixed and mobile training sites registered independently in WINDA. Upon payment of this fee, GWO grants the training provider access to WINDA. Further, the training provider obtains (i) appearance of fixed training sites on the interactive map of training providers; (ii) the right to use the "Certified Training Provider Annual Badge"; and (iii) the right to use GWO's logo. The right to use the "Certified Training Provider Annual Badge" and GWO's logo are in accordance with GWO's fair use policy only"</p> S 6.2.6 Added: In order to attend a refresher module, the initial training for the corresponding module is a prerequisite. S7.1.2 Added bullets: <ul style="list-style-type: none"> g) risk assessments shall be conducted and documented for all training facilities h) the training provider shall hold the required permits to operate the facilities Section 8 (Instructor qualifications): Overall change, following the introduction of the Instructor Qualification (IS) Standard and a new process to qualify instructors 			



4. INTRODUCTION

The Global Wind Organisation (GWO) is an association of wind turbine owners and manufacturers that was established in 2009. It has the mission statement of supporting an injury-free work environment in the wind industry through cooperation among its members in setting common industry best practice standards for health and safety-related training

GWO is a non-profit organisation, and all income is re-invested in support of the mission statement. Activities include scheme governance, development and maintenance of training standards and modules, communication and various outreach initiatives, as well as general operations

Central to our governance is the global training records database, WINDA, which enables training partners, operators and individuals to verify training, and provides industry-wide transparency regarding the training status of personnel

This document contains GWO's Requirements for Training. These Requirements and the associated Requirements for Certification (see separate document) must be met in order to obtain approval as a GWO training provider, with the right to offer training courses following a GWO training standard

This document constitutes version 14 of the Requirements for Training. Version 14 has been created with input from stakeholders, recent governance issues and WINDA database system. These were consolidated by a working group of selected stakeholders (auditors and training providers)

Version 14 replaces all previous versions and comes into force; December 4th, 2023

Until May 4th, 2024, version 13 remains valid. However, version 14 may be used at the discretion of the certification body from the date of approval, if so agreed with the training provider

Approved by Global Wind Organisation's (GWO) Board of Directors, 9th November, 2023

5. THE CERTIFICATION PROCESS

Training providers seeking certification to offer GWO training shall be audited to demonstrate compliance with the following four sections of the quality management system, as detailed in:

Section 7 – Supporting processes

Section 8 – Equipment and physical resources

Section 9 – Instructor qualifications

Section 10 – Training and assessment

The certification process differs from a simple management systems audit in the attention to the delivery of training, taxonomy and learning transfer



All GWO training providers shall be registered in GWO's WINDA platform to record, monitor and transfer training, audit and certification records. New training providers seeking to become GWO-approved training providers shall be registered by their associated GWO certified auditor and (in turn) their certification body

GWO has an annual licensing fee associated with each certified fixed and mobile training site registered independently in WINDA. Upon payment of this fee, GWO grants the training provider access to WINDA. Furthermore, the training provider obtains (i) appearance of fixed training sites on the interactive map of training providers; (ii) the right to use the "Certified Training Provider Annual Badge"; and (iii) the right to use GWO's logo. The right to use the "Certified Training Provider Annual Badge" and GWO's logo are in accordance with GWO's fair use policy. The policy can be found on the GWO website

To obtain and maintain approval as a GWO training provider, training provider organisations shall be subject to an audit process performed by GWO-approved certification body that fulfils GWO's Requirements for Certification and is listed as an approved certification body on WINDA. The full process requires an initial certification audit followed by annual audits for surveillance (initial) and surveillance (re-certification), as detailed in the Requirements for Certification

To maintain certification, GWO training providers must be aware of, and comply with, GWO's Requirements for Certification. These include scheduling and frequency of audits, location of audits, and duration of audits to be completed by the certification body

6. SUPPORTING PROCESS

The training provider must have a formally documented quality management system for assuring the quality, content and safety of training and assessment, and compliance with the GWO requirements and standards

The training provider must have an explicit policy for implementing and maintaining the validity of GWO standards and modules, which must be signed by the legal duty holder. The policy must state which standards and modules the training provider is certified to deliver

As a minimum, the supporting processes shall include the following:

- a. description of organisation, roles and responsibilities
- b. handling of training records
- c. risk assessment and mitigations, non-conformities and incident reporting

6.1 Organisation, Roles and Responsibilities

The training provider must:

- 6.1.1 Have a clearly defined organisation with documented staff roles, responsibilities and authorities for the supporting processes, equipment and physical resources, instructor competencies and delivery (training and assessment) of the GWO standards and modules



- 6.1.2 Ensure (at a minimum of once every 12 months) training providers' delivery of GWO standards and modules, compliance with certification requirements and the policy and objectives are reviewed by senior management
- 6.1.3 Ensure (at a minimum of once every 12 months) internal audits are conducted by personnel with an auditing background and with no conflicting interest in the area(s) being audited, to ensure quality and the objective evaluation of all system activities
- 6.1.4 Have in place documented procedures describing how to handle documents and records in relation to the approval, review or identification of changes and revisions, access, etc

6.2 Documentation and Training Records

- 6.2.1 Upon completion of training and within no more than 10 business days, the training provider must ensure the following records of training are uploaded into WINDA:
 - a. course participant WINDA ID
 - b. applicable GWO standard or module (course code)
 - c. completion date of standard or module training
 - d. previous course valid until date (only applicable to refresher modules training)
- 6.2.2 In addition to the above, the training provider must keep verifiable matching records of:
 - a. course participants' first name and last name, as written in passport or other official documents
 - b. daily attendance of all participants
 - c. name(s) of instructor(s) delivering course
 - d. site of training conducted (location and country)
 - e. course participant assessment form for the course delivered
 - f. participant acknowledgement of performance assessment
 - g. if gap training has been delivered on base of merit, documentation of pre-existing qualification
 - h. training setting as per section 7.2 (see below)
- 6.2.3 These records must be stored for at least two years and three months from the completion date for training records that require a refresher training every 24 months, and a minimum of five years and three months for training records that do not require a refresher training
- 6.2.4 The maintenance, updating and backup of systems to keep these records must be carried out in accordance with applicable legislation and standards concerning data storage and IT systems security



- 6.2.5 Upon request from GWO Secretariat or any of the members of GWO, the training provider shall be able to verify the training documentation described in 6.2.2 including, but not limited to, daily attendance records, training and competence records of any specific person attending a course and/or performing training of a course by name and nationality
- 6.2.6 In order to attend a refresher module, the initial training for the corresponding module is a prerequisite. A course participant may attend a refresher course in the specific training standard or module prior to the date of expiry of the current certificate or training record
- 6.2.7 If a training record is refreshed within the two months prior to expiry of the previous training, its new validity will begin from the previous certificate's 'valid until date' in WINDA
- 6.2.8 If a certificate or training record is refreshed more than two months before expiry, it will carry the training completion date as the 'valid from date'
- 6.2.9 If a certificate or training record has expired, the course participant must attend the full initial training to obtain a new training record
- 6.2.10A certified training provider may undergo an audit during a pilot training. Pilot trainings refers to delivering a new training for a standard or module which is not publicly available yet and which GWO plans to formally release to the market soon. However, a certificate cannot be issued by the certification body until the standard or module has been released by GWO. If there are any changes to the standard or module between the pilot and the release of the standard or module, the training provider must demonstrate to the auditor how they have implemented and mitigated these changes before the certificate can be issued
- 6.2.11 WINDA records for participants undertaking a pilot training which is also audited may be uploaded only when the certificate has been issued by the certification body. In this case the records are exempted from the requirement to upload within 10 days from completion. Instead, the records upload requirement is modified to be 10 days from the date dependencies are resolved. If there are changes to the standard or module between the pilot and the release of the standard, the training provider must demonstrate to the auditor how they have implemented and mitigated these changes in participants' training before participant WINDA records may be uploaded
- 6.2.12 Training providers may, in addition to the requirement for uploading a training record to WINDA, issue other additional proof of training, e.g. paper certificates or plastic cards. If the training provider chooses to do so, this must include the course participant's WINDA ID and name as written in their passport or other official documents
- 6.2.13 Training records must be uploaded by the holder of the WINDA registration (i.e. training provider organisation) under which the training was delivered

6.3 Risk Assessment, Non-Conformities and Incident Reporting

The training provider has the responsibility to safely deliver GWO training by ensuring that the facilities and equipment are safe, by means of the following:

- 6.3.1 An established procedure for risk assessment and risk management in particular, with a view to ensure safe training delivery. As a minimum, this shall cover training equipment and facilities, instructor qualification



programmes and the instructor's delivery of training for all sites (settings) and all modules certified to be delivered according to GWO

- 6.3.2 A procedure describing how to handle non-conformities, including customer complaints. Copies of recorded non-conformities, including customer complaints received, must be provided to GWO upon request
- 6.3.3 A procedure for course participants to appeal against assessment decisions. Copies of appeals must be provided to GWO upon request
- 6.3.4 Ensuring a course participant satisfaction programme for the delivered training is in place, and that results are published on the training provider's website. If training occurs in-house, the satisfaction programme results must be published in a relevant and accessible place for course participants and internal procurers of training. Copies of the satisfaction programme results must be provided to GWO upon request
- 6.3.5 A system for recording incidents (including near-misses) during delivery of GWO standards and modules training. The incident categories shall mirror the Incident Reporting and Root Cause Analysis Guidelines found in Annex 3
- 6.3.6 The training provider must inform GWO of incidents within 24 hours if the incident is significant and within 7 days for all other incidents, as defined in the Incident Reporting and Root Cause Analysis Guidelines in Annex 3

7. EQUIPMENT AND PHYSICAL RESOURCES

The training provider must clearly demonstrate that there are adequate resources to ensure that the training and assessment can be consistently delivered in accordance with the GWO standards and modules

7.1 General Requirements for Equipment and Physical Resources

- 7.1.1 Resource requirements shall be identified and made available for the delivery of training, in accordance with the GWO standard or module being delivered
- 7.1.2 The training provider has the responsibility to safely deliver GWO standards and modules training by ensuring that the facilities and equipment are safe and functional, by means of the following:
 - a. the training area shall be clearly marked and free of distractions, including mobile phone usage
 - b. the full range of facilities and equipment relevant to the standards and modules delivered shall be available during the training
 - c. all equipment and facilities must adhere to the applicable legislation, standards and guidelines for facilities and equipment
 - d. a documented maintenance schedule must be carried out based on the frequency of equipment use, relevant risk assessments and other obligations as listed above. If the equipment and/or facilities belong to a third party, the training provider must ensure that a documented maintenance schedule as described above is followed for the equipment/facility



- e. the facilities shall be designed to enable each course participant to see, hear and fully participate in the training instance
- f. the practical training facilities must incorporate as many identical or comparable elements to a real wind turbine working environment as possible
- g. risk assessment shall be conducted and documented for all training facilities
- h. the training provider shall hold the required permits to operate the facilities

7.2 Training Site Settings

GWO training can be conducted in the following specified settings:

- a. fixed training facilities
- b. mobile training facilities
- c. on-site training (field training)
- d. digital learning

A training provider may operate several training settings at different locations. All requirements in 7.1.2 (above) apply to all training settings

Fixed Training Facility

- 7.2.1 A training location is considered to be a fixed training facility when a GWO-approved training provider performs regularly planned training using known equipment and facilities located in a permanent location, where the training provider's risk management is supported by the permanent training environment
- 7.2.2 A separate WINDA profile is created for each fixed training facility operated by a training provider. A training provider with several fixed training facilities may be audited by a different certification body at each fixed site. Special provisions apply for multi-sites as explained in the Requirements for Certification section 7

Mobile Training Facility

- 7.2.3 A mobile unit designed to be transported and to recreate a dedicated, controlled training environment at a new temporary location is considered as a mobile training facility
- 7.2.4 A new risk assessment must be carried out and documented for each new temporary location prior to training delivery. This risk assessment must consider the limitations of the mobile unit and describe mitigations
- 7.2.5 The risk assessment and mitigations must be signed off by at least one of the responsible instructors at each site before use
- 7.2.6 Mobile training facilities may be registered on WINDA using a training provider's permanent address. Mobile training facilities' training records shall be identified separately during uploading to the shared WINDA profile



7.2.7 A training provider may have several mobile training. Special provisions apply for multi-sites as explained in the Requirements for Certification section 7

On-Site Training (Field Training)

7.2.8 On-site training is when training takes place in the field (for example, at local wind turbines). In these cases, a portion of the training can also be delivered in a location such as a small service centre, office environment, or similar, but certification for that location as a fixed training facility is not required

7.2.9 On-site training also includes when training takes place during a maximum of 12-month period at a fixed training facility that is not the training providers' own GWO certified fixed training facility

7.2.10 Risk and quality management are key when training on-site, meaning GWO requirements will explicitly focus on these areas. To receive an audit and the approval to conduct GWO training in an on-site environment, the training provider must:

- a. already operate one or more GWO-certified fixed and/or mobile training facilities that can support ongoing instructor qualification in accordance with GWO requirements. A training provider may be certified to deliver any standards or modules in the on-site training environment regardless of which standards or modules are certified for fixed and/or mobile training. And
- b. create a risk assessment and control measures document prior to each training delivery. This risk assessment must consider the limitations of the location used for on-site (field) training and describe mitigations. The risk assessment must take into consideration local risk factors on the day of training (including, but not limited to weather and safe evacuation procedures). Further, it must testify that the equipment and locations are safe and functional, as well as being compliant with the relevant GWO standard or module. The document must carry the signature of at least two competent persons, usually one of the instructors and a person representing the legal owner of the on-site structure, prior to training delivery

7.2.11 Between audits, the training provider may deliver training at several sites. All records including the location-specific risk assessments associated with each training delivery shall be kept and a representative sample of records shall be reviewed by the auditor during surveillance audits

7.2.12 If approved for on-site training, the training provider shall use the WINDA profile associated with the fixed training facility or mobile training facility that is used as the basis for supporting on-site training delivery

Digital Learning

7.2.13 Digital learning technologies may be used by training providers already certified by GWO. The digital learning set-up must be audited for every standard and module the training provider wishes to deliver in this setting.

7.2.14 Digital learning technologies considered include the following:

- a. interactive e-lessons that include text, images, video, audio, animations and practice (e.g. questions and feedback)



- b. online presentations made by an instructor that are broadcasted in real time or recorded (i.e. podcasts)
- c. webinars and virtual classrooms
- d. virtual and augmented reality
- e. blended learning with a mixture of digital and traditional learning
- f. other technologies that support or enable the delivery of training via digital means

Note *The GWO Taxonomy Framework which describes learning objectives is given in Annex 4.*

Learning objectives within the domain of knowledge may be taught and assessed using digital learning methods including those listed above.

Learning objectives within the domains of skill and ability require that the course participants be able to demonstrate an ability in a scenario that is similar to a real work situation. In addition to safety aspects, demonstration by course participants involves body motor functions, spatial understanding, and tactile elements. Special attention must be given to these aspects when applying digital learning to these domains.

7.2.15 Training providers who employ digital learning technologies during GWO standards and modules training must have specific procedures in place for the use of these technologies, including describing how the applied technology limits and/or enhances opportunities for interaction with the learning material and the instructions. The procedures and descriptions must detail how these limitations are mitigated

7.2.16 Training providers who use digital learning technologies must have systems in place to enable the training provider to assess whether the course participant has achieved the learning objectives

7.2.17 If the digital solution incorporates elements of recording the course participant, the course participant must be advised of this and give prior consent

7.2.18 Any system employed for the delivery of digital learning solutions must:

- a. incorporate a high level of realism and fidelity with a wind turbine environment, to enable the course participant to use the knowledge, skills and ability in real-world work situations in accordance with the GWO training standard or module being delivered
- b. incorporate a system whereby the training provider can verify the identity of participants in the training, and assess the individual course participant's learning

7.2.19 Where course participants attend digital learning at a location other than the training centre, the training provider must make reasonable efforts to ensure the safety of the course participants while participating in the training



8. INSTRUCTOR QUALIFICATIONS

Instructors shall possess appropriate qualifications and experience to ensure that all training and supportive activities are carried out in accordance with applicable legislation and/or recommended guidelines

8.1.1 INITIAL CERTIFICATION

There are two paths to become a GWO instructor. The POCD process or the Instructor Qualification process. Depending on the chosen route, as a prerequisite, the instructor must have documented a minimum of 100 hours of vocational teaching experience, GWO Instruction Qualification training, or formal instructor qualification that meets or exceeds GWO Instructor Qualification training prior to qualifying as a GWO instructor

8.1.2 POCD PROCESS

The POCD process of instructor qualification will engage the trainee instructor in the following process in the applicable module before delivering the training independently. The following four steps can be repeated one by one until the trainee instructor has completed each step satisfactorily:

a. Participate:

The trainee instructor must successfully complete the training as a course participant in the GWO Standard or module and receive a Training Record in WINDA

b. Observe:

The trainee instructor must observe the full standard or module training. The task is to observe the delivery of training, observe interaction between the instructor and course participants, and observe how participants engage with the material

c. Co-deliver:

The trainee instructor must deliver parts of the training supported by a supervising instructor. Prior to the training, the trainee instructor and the supervising instructor must plan together which parts of the training will be delivered by whom. The focus is on ensuring that the trainee instructor is able to deliver all parts of the training

d. Deliver under observation (assessment):

The trainee instructor must now independently deliver the full standard or module training under observation for assessment by an experienced GWO instructor, GWO approved auditor with IQT, or internal auditor with IQT. The assessor must verify and document that the trainee instructor demonstrates instructor knowledge, skills and abilities as detailed in 8.1.4 (below)

e. Table 8.1.2 (below) summarises the POCD process including the instructional background, familiarisation with the applicable training standard, assessment of the instructor, and required documentation to confirm each element



POCD	Documentation
Instructional Background	
100 hours vocational teaching experience	Must be verifiable
OR GWO Instructor Qualification Training	WINDA Training Record
OR Ensure formal instructor qualification that meets or exceeds GWO IQT	Gap analysis
Module Specific Attributes	
Participate	All steps require internal documentation of successful completion
Observe	
Co-Deliver	
Deliver under observation	Assessment and sign off
Assessment by	
Experienced GWO Instructor certified in the module	Documentation of the final assessment as detailed in 8.1.4
OR GWO approved auditor with instructor qualification to meet or exceed GWO IQT	
OR Internal Auditor with instructor qualification to meet or exceed GWO IQT	

Table 8.1.2 POCD Process

8.1.3 INSTRUCTOR QUALIFICATION PROCESS

Any instructor qualification process must verify and document that the trainee instructor is competent and safe in delivering the standard or module. Before an instructor can be certified through the GWO Instructor Qualification Standard, the process being used by the training provider must be verified through an audit with an approved GWO certification body.

- a. Table 8.1.3 (below) outlines the minimum requirements for GWO's Instructor Qualification process including the instructional background, familiarisation with the applicable training standard, assessment of the instructor, and required documentation to confirm each element.



Instructor Qualification Process	Required Documentation
Instructional Background	
GWO Instructor Qualification training	WINDA Training Record
OR Ensure formal instructor qualification that meets or exceeds GWO IQT	Gap Analysis
Module Specific Attributes	
Training provider shall (as part of qualifying as a trainee instructor to deliver a standard or module), have a procedure for creating a personal plan for the qualification of instructors ensuring content competency including experience and background within the domain	Content competency Personal plan
Consideration about how to avoid major risks during training	Risk assessment
Document knowledge of training material and setting(s) how to achieve difficult learning objectives.	Training plan
Assessment by	
Training provider must verify and document that the instructor is able to plan, deliver, and assess the GWO training module according to the GWO Taxonomy and Requirements for Training	Documentation of the final assessment as detailed in 8.1.4
Instructors qualified through the Instructor Qualification process will be registered in WINDA	Assessment and sign off WINDA Registration

Table 8.1.3 Instructor Qualification Process

b. Gap Analysis

Formal instructor qualification programmes should be analysed against the learning objectives and outcomes as outlined in the GWO Instructor Qualification training Annex 5.

c. Personal Plan

Must address individual instructor needs, experience, competencies, and risks specific to the module, training provider, equipment, and setting

d. Content Competency

Must meet the instructor qualifications dictated by the module to be delivered

e. Risk Assessment

Must have a risk assessment of major risks and hazards specific to the module and how to avoid and mitigate during training, including addressing the level of experience of the instructor.

f. Training Plan

Plan for delivering the module including how to reach learning objectives and assess learning outcomes



8.1.4 ASSESSMENT AND DOCUMENTATION

The instructor qualification training process must achieve documented confirmation that all instructors are able to independently deliver the full training standard or module. This must, as a minimum, demonstrate:

- a. knowledge of the wind energy industry and key safety aspects, especially as relevant for the target standard or module
- b. familiarity of the working conditions and layout of a wind turbine, especially as relevant for the parts covered within the target standard or module
- c. the ability to plan and deliver training in accordance with the standard or module by adhering to the following requirements in the standard or module, such as:
 - c.i training environment
 - c.ii training setting(s) (see above in 7.2)
 - c.iii correct use of PPE
 - c.iv safety during practical exercises
 - c.v covering all learning objectives at the correct taxonomic level
- d. the ability to assess individual course participant knowledge, skills, and abilities by applying the GWO taxonomy levels and terminology stated in the standard or module. GWO Taxonomy Framework can be found in Annex 4
- e. the ability to give feedback and individual coaching towards achieving learning objectives

8.1.5 MAINTAINING INSTRUCTOR QUALIFICATIONS

- a. To maintain instructor qualification, instructors shall participate in an ongoing competence programme for the specific standard and module.
- b. In addition, instructors must be included in a documented ongoing familiarisation programme consisting of either:
 - b.i visits to onshore and/or offshore WTGs (tower, nacelle, hub) prior to instructing GWO standards and modules training, to enable them to maintain and update skills related to the GWO standards and modules they instruct, or
 - b.ii alternative ways of ensuring familiarisation with the wind turbine working environment and updated skills related to the GWO standards and modules they instruct

- 8.1.6 To maintain qualification in a specific standard or module, the instructor must deliver the full module or participate in the qualification of other instructors in the module within a period of 12 months. If more than 12 months, the instructor must re-qualify based on an assessment by the training provider



- 8.1.7 By means of a documented process, the instructor's competencies must be assessed by the training provider once every 12 months using the criteria listed in 8.1.4
- 8.1.8 The instructors must comply with the requirements and learning structures of the specific standard and module and the GWO Code of Conduct available on www.globalwindsafety.org

9. TRAINING AND ASSESSMENT

9.1 General Requirements of Training

- 9.1.1 The GWO standards and modules set minimum training requirements
- 9.1.2 Where applicable legislation sets additional requirements for training content, the training provider shall incorporate these identified requirements into the training
- 9.1.3 Where applicable legislation prohibits the delivery of certain elements, the training provider shall not deliver those elements
- 9.1.4 Provided the minimum requirements of the GWO standards and modules are met, the training provider may incorporate delivery of other equivalent non-GWO certified training, including but not limited to elements that arise from applicable legislation. When additional elements are incorporated these shall be clearly communicated to the participants and delivery shall be subject to the same requirements for risks assessed, safety delivery laid out in sections 6, 7 and 9. It shall be possible for participants to opt out of any elements that contain risks beyond the scope of the original standard or module, except if arising from applicable requirements
- 9.1.5 All exercises shall be designed and delivered to meet the learning objectives of the GWO standards and modules being taught. General information on GWO learning objectives, and suitable learning activities is provided in Annex 4: Taxonomy Framework
- 9.1.6 In each standard or module, learning objectives, lessons and elements may be delivered in the order that fits best for the specific training situation. Theoretical elements should be delivered during the practical exercises when feasible as far as to not compromise the achievement of the learning objectives
- 9.1.7 The training provider shall ensure detailed and updated lesson/exercise plans are clearly referenced against the latest versions of the relevant standard and module (including learning objectives, performance assessment, instructor/course participant ratios, resources to be used, time allocation, location of training, staff roles, etc). Valid versions of standards and modules are available for download on www.globalwindsafety.org
- 9.1.8 All training shall be conducted safely, and at least one person with first aid qualifications shall be present during all practical training
- 9.1.9 Practical exercises shall not place undue physical or mental demands on the course participants beyond that which is required to meet the learning objectives of the GWO standard or module being taught
- 9.1.10 When the training is not done in one sequence, the training provider must ensure the following elements are covered in the training execution



- a. the identity of the participant is verified for each element of the training
- b. the training is completed within a maximum of 28 days
- c. the whole curriculum is covered
- d. that theory and safety learning objectives previously covered in the training are verified for all participants by the instructor within 24 hours before participation in the practical activity

9.2 Course Participant Prerequisites

The training provider must ensure the following:

- 9.2.1 All course participants shall conform to any GWO prerequisites for the specific standard and modules as well as personal legal obligations
- 9.2.2 The course participant shall have created a personal profile in WINDA, and have provided their WINDA ID prior to completing the GWO training
- 9.2.3 The course participants shall be medically fit, appear well-rested and be capable of fully participating showing no signs of fatigue, substance abuse or sickness
- 9.2.4 If there is any doubt regarding the medical fitness or ability to fully participate safely of any course participant, the training provider shall stop training the course participant, and refer to the course participant's immediate manager or seek a physician's advice in so far as this is permitted by applicable legislation
- 9.2.5 Training providers shall have a procedure that informs the course participants of the physical demands of the training, and shall, prior to attendance, require course participants to sign a statement testifying to their medical fitness. Annex 2 contains an example of a 'medical self-assessment form'. This may be used if no other equivalent procedure is in place
- 9.2.6 When attending refresher training, the course participants must do so before the expiry of the previous training record's validity period

9.3 Contact Time and Instructor-to-Course Participant Ratios

- 9.3.1 The training provider must not exceed the instructor to course participant ratio shown for each GWO standard and module
- 9.3.2 The training provider must ensure that sufficient time is allowed for course participants with prior experience to share their experiences related to the standards and modules in a way that is constructive for the entire class
- 9.3.3 The lesson durations described in GWO standards and modules are calculated according to the maximum instructor to participant ratio. In situations where fewer participants attend the training, the duration of practical activities may be proportionately adjusted as far as to not compromise the achievement of the learning objectives



- 9.3.4 The total training day must not exceed 10 hours per day, including meals, breaks and travel between training sites
- 9.3.5 Total training direct contact time must not exceed eight hours per day. Contact time includes delivery of course lesson contents, practical exercises and activities directly related to these

9.4 Participant Performance Assessment

- 9.4.1 The performance of course participants shall be assessed according to the learning outcomes by means of direct observation and oral and/or written questions, where appropriate
- 9.4.2 The instructor shall document participants attendance by an attendance record (signed daily by each course participant) or alternative verification method, as well as their performance assessment. The performance assessment shall be used throughout the course to give feedback to guide the participant to successful learning, as well as keeping track of non-conformities with regards to safety, competency or attitude
- 9.4.3 The performance assessment shall be used as documentary evidence of successful training having taken place and support the uploading of records of training into WINDA
- 9.4.4 In the event that a course participant does not meet the stated learning objectives, the training provider shall have a documented procedure enabling their appeal
- 9.4.5 An example of a course participant performance assessment form is provided in Annex 1. The training provider may adapt the form to other media



Annexes



ANNEX 1 - PERFORMANCE ASSESSMENT FORM

Course Participant's Full Name, as in Passport					
WINDA ID					
Course / Module					
Date of Completion					
Training Setting					
Scenario Organisation	Violation of Assessment Measures			0-2 Passed / 3 Failed	Instructor's Remarks
Aware of personal and group safety at all times					
Organises and utilises correct equipment for given scenario					
Organises individuals and groups as required					
Scenario Management					
Establishes and maintains control of the exercise scenario at all times					
Fully participates in the exercise scenario					
Follows instructors when required					
Demonstrates correct and safe manual handling in all exercises					
Knowledge and Understanding					
Applies subject knowledge correctly in given scenario					
Demonstrates understanding of subject					
Total Marks:	0-9 Pass 10-27 Fail				Pass: <input type="checkbox"/> Fail: <input type="checkbox"/>
Instructor's Name (in CAPITAL letters)					
Instructor's Signature					
Training Provider					



ANNEX 2 - MEDICAL SELF-ASSESSMENT FORM

YOUR PERSONAL HEALTH IS YOUR RESPONSIBILITY.

I hereby confirm that I have read and understood the listed risks and potentially life-threatening medical conditions, and confirm that I am physically and medically fit to participate in GWO training.

I hereby confirm that there is no factor that will inhibit or affect my participation in GWO training. I agree to follow all instructions from the appointed instructor for the duration of the GWO training. Should there be any doubt regarding my medical fitness, the training provider will stop the training and seek a physician's advice.

Full Name as in Passport	
Participant WINDA ID	
Training Standard or Module	
Signature and Date	
The following conditions could pose a risk when you participate in GWO training. Alert your training provider if you suffer from any of the following:	
<ul style="list-style-type: none"> • Asthma or other respiratory disorders • Epilepsy, blackouts or other seizures • Angina or other heart complaints • Vertigo or inner ear problems (difficulty with balance) • Claustrophobia/acrophobia (fear of enclosed spaces/heights) • Blood pressure disorder • Diabetes • Pacemaker or implanted defibrillator • Arthritis, osteoarthritis or other muscular/skeletal disorders affecting mobility • Known allergies (e.g. bee/wasp stings or spider bites) • Recent surgery • Any other medical condition or medication dependency that could affect climbing or the physical impact of climbing 	

Note *This form is an example of a medical self-assessment form. The training provider must modify this form and the medical conditions listed therein to satisfy the legislation and requirements applicable to the geographic location of the training centre.*



ANNEX 3 - INCIDENT REPORTING AND ROOT CASE ANALYSIS

1. Scope and Objectives

Incidents during training as defined in this annex must be reported to GWO within the timelines stated. No references to personal data shall be included in the incident description. Should GWO share the incident with other stakeholders, no references will be made with regard to the training provider sharing the incident.

This instruction applies to all GWO-certified training providers in terms of reporting, investigating and mitigating any event defined by GWO as an "incident or significant incident".

2. Definitions

Incident:

An undesired or unplanned event that has caused injury to any person participating in GWO-certified training. This also includes first aid cases.

First aid:

Medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a single instance of short-term treatment and requires little technology or training to administer. First aid can include the cleaning of minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; and drinking fluids to relieve heat stress.

Significant incident:

An undesired or unplanned event that has caused serious injury to any person on a training site participating in GWO-certified training. As a minimum, the following will be considered as a significant incident:

- a. Fractures, other than to fingers, thumbs and toes:
- b. Bone fractures diagnosed or confirmed by a doctor, including a break, crack or chip. In some cases, there may be no definitive evidence of a fracture (e.g. if an X-ray is not taken), but the injury will still be deemed as serious if a doctor considers it is likely that the bone has been fractured. Self-diagnosed 'suspected fractures' are not reportable.
- c. Amputation of an arm, hand, finger, thumb, leg, foot or toe. Amputation includes both a traumatic amputation injury at the time of the accident, and surgical amputation following an accident, as a consequence of the injuries sustained.
- d. Any injury likely to lead to permanent loss of sight or reduction in sight in one or both eyes.
- e. Any blinding or injuries causing reduction in sight are considered as serious when a doctor diagnoses that the effects are likely to be permanent.
- f. Any crush injury to the head or torso, causing damage to the brain or internal organs.



- g. Injuries to the brain or internal organs in the chest or abdomen, when caused by crushing as result of an accident.
- h. Any burn injury (including scalding) that covers more than 10% of the whole body's total surface area, or causes significant damage to the eyes, respiratory system or other vital organs.
- i. Burns that meet the above criteria are considered as serious, irrespective of the nature of the agent involved, and so include burns caused by direct heat, chemical burns and radiological burns. Where the eyes, respiratory system or other vital organs are significantly harmed as a consequence of a burn, this is a serious injury irrespective of the surface area covered by that burn. Damage caused by smoke inhalation is not included in this definition.
- j. Any degree of scalping requiring hospital treatment. Scalping is the traumatic separation or peeling of the skin from the head due to an accident, e.g. hair becoming entangled in machinery.
- k. Lacerations, where the skin is not separated from the head, are not included, nor are surgical procedures where skin removal is deliberate.
- l. Any loss of consciousness caused by head injury or asphyxia. Loss of consciousness means that the injured person enters a state where there is a lack of response, either vocal or physical, to people trying to communicate with them. The length of time a person remains unconscious is not significant in terms of whether an injury is considered as serious.
- m. Any other injury that:
 - m.i includes heat-induced illness, or
 - m.ii requires resuscitation or admittance to hospital for more than 24 hours.

Significant near-miss incident:

An undesired or unplanned event that could potentially have caused serious injury to a person on a training site, participating in GWO-certified training.

Incident investigations:

Incident investigations must focus on identifying and correcting the causes of a problem and not the symptom of the problem (e.g. finding fault or attributing blame to individuals), and thus demonstrate commitment to a safe training facility. An incident investigation must utilise a structured and standardised approach to identify the root causes of an incident and to deliver corrective actions for removing or reducing the likelihood and severity of future similar incidents. Incident investigation starts when the incident occurs, and ends when corrective actions have been established and the implementation deadline has been set.

Causal factor:

Human mistake or equipment failure that, if corrected, could have prevented the incident from occurring, or would have significantly mitigated its consequences.



Root cause analysis:

Analytical review in a structured environment of conditions and events leading to an incident. An incident will often have multiple root causes.

Root cause:

The absence of best practice or the failure to apply knowledge that would have prevented the problem or mitigated the consequences.

The following requirements apply when reporting incidents:

3. Reporting an Incident and Significant Near-Miss Incident

Any incident or significant near-miss incident must be reported to GWO from the "File an Incident" page on www.globalwindsafety.org **within 7 days of occurrence**.

4. Reporting a Significant Incident

Any incident or significant near-miss incident must be reported to GWO from the "File an Incident" page on www.globalwindsafety.org **within 24 hours of occurrence**.

Any significant incident shall lead to an immediate stop of training delivery for that standard or module, including any training planned for the following days. Should the immediate cause of the incident affect not only the training standard or module in question but other modules as well, all GWO training shall be put on hold. Training cannot be resumed until written confirmation has been provided by GWO on this matter.

A complete report must be submitted to GWO **within seven days of the incident**.

GWO has the right to review the complete report within ten business days after receiving the report, and to request any further information that is deemed to be relevant. The review is a qualitative assessment of the investigation's findings, the root cause analysis and the corrective actions.

5. References and Recommended Guidance

List of References

Reference	Link
OSHA, record-keeping criteria	https://www.osha.gov/recordkeeping/
HSE, Riddor	https://www.hse.gov.uk/riddor/

List of Recommended Guidance on Incident Investigation and Root Cause Analysis

Recommended Guidance	Link
OSHA incident investigation	https://www.osha.gov/dcsp/products/topics/incidentinvestigation/
CCOSH incident investigation	https://www.ccohs.ca/oshanswers/hsprograms/investig.html



HSE guidance on investigating
accidents and incidents

<https://www.hse.gov.uk/managing/delivering/check/investigating-accidents-incidents.htm>



ANNEX 4 - GWO TAXONOMY FRAMEWORK

Terms and Definitions

Term	Definition
Learning	<p>In the GWO Taxonomy Framework, learning is defined as:</p> <p>Learning is individual and personal constructions of experiences. Experiences are the results of reflections on impressions from acting. Acting includes listening, reading, observing, discussing, and trying to solve a task. To act always involves more than the individual itself, and therefore experience – and thus learning - is a social construction. To learn, we have to act, and the more motivated, involved, and active we are in the process, the more we learn.</p>
Motivation	<p>Motivation is an internal state that activates, guides, and sustains behaviour. It impacts the speed and efficiency of the learning process. Individuals who are motivated persevere longer, produce higher quality effort, learn more deeply, and perform better in training activities and work situations.</p>
Observe	<p>We use observe in the broad sense of, to examine. To observe is to actively acquire information from a primary source. Observation employs the senses and enables transfer of knowledge.</p> <p>Observing how a technique is being performed or how another participant is practising a skill, helps the participants familiarise themselves with new knowledge or skills and gain confidence to repeat the learning activity. Observing also facilitate the instructor's assessment of the participant's development.</p>
Reflection	<p>Reflection is more than just thinking about a topic. Reflection is critical thinking putting one's understanding into perspective to find a well-thought-out solution to a challenge. It can also be about how new impressions fit into the individual's present experiences.</p>

Foreword

All employees in the wind turbine industry shall be sufficiently trained and have the abilities required to carry out their work in a safe and injury free work environment at all times. The purpose of GWO's Taxonomy Framework is to reinforce this vision by establishing a transparent principal framework to describe safety training characteristics and participant performance in shared terms.

The GWO Taxonomy Framework is based on multiple global qualification frameworks that focus on lifelong learning.¹ The specific aim of the Taxonomy Framework is to ensure coherence and conformity between the

¹ e.g., The African Continental Qualification Framework (ACQF) Factsheet (2020), Australian Qualification Framework (www.training.com.au), OECD report (2016) on Organisation and Management of Education in China; European Qualification Framework, UNESCO/UNEVOC world TVET database on USA



learning objectives in GWO training standards and modules and their related learning activities delivered in trainings conducted by GWO training providers.

Training providers and auditors are a natural audience for the Framework and the guidelines for training specification and evaluation it provides. It is particularly relevant when describing, planning, conducting, and auditing training and learning activities.

The GWO Taxonomy Framework supports:

- *Quality assurance* by creating more effective training and auditing of training.
- *Improved guidance* on transforming learning objectives into focused learning activities.
- *More structured training audits with pedagogical focus* by providing a single, coherent, and up to date set of detailed requirements and definitions for planning, conducting and assessing, training and learning processes.
- *Increased work force mobility* by defining transparent, globally comparable levels of education which facilitate the portability of training certifications.

Introduction to the Taxonomy Framework

Focus

At the core of this taxonomy is the set of action verbs used in the GWO Training Standards learning objectives. These action verbs are presented with increasing complexity and in a progressive order.

When to Use the Taxonomy Framework

The GWO Taxonomy Framework is applicable whenever:

- Developing and reviewing training standards and modules.
- Planning both theoretical and practical learning activities.

The GWO Taxonomy Framework is applicable whenever:

- Developing and reviewing training standards and modules.
- Planning both theoretical and practical learning activities.

Important Concepts

Action verbs

Specific action verbs are indicative of a single taxonomic level. They demand specific learning activities so that participants can achieve a predetermined learning objective. During a learning activity the participant shall practise what the action verb indicates.



Similarly, a participant's ability to achieve a learning objective can be assessed by comparing the participant's training performance with the appropriate action verbs. Training evaluation shall be carried out while a participant is in action as well as at the end of a training.

Learning objectives

GWO uses the term learning objective in connection with training standards and modules and certifications.

The domains of knowledge, skills and ability are used to describe learning objectives. Definitions of knowledge, skills and ability are presented in three levels: basic, intermediate, and advanced level. On each level, it is implicit, that learning objectives at lower levels are met. Thus, a learning objective indicates the specific knowledge, skills, and abilities a person with a given certification is expected to possess as the result of a learning process.

Learning objectives are key elements of evaluation of participants' performance and development.

Evaluation

Summative evaluation aims to measure the learning outcome at the end of a training. Summative evaluation must be conducted in the same environment and structure as the related learning activities.

Formative evaluation aims to assess the level achieved and to support the continued learning towards the learning objective. Formative evaluation is supplemented by further guidance and feedback to the participant.

Learning activities

Learning activities must aim at the knowledge, skills, or abilities defined in the learning objectives, so that the participants' progress can be observed and supported on an ongoing basis. In the Taxonomy Framework, the listed learning activities are the minimum standard of learning activities for each domain and level. Training providers and instructors with a flair for creativity and focus on excellence may go above the listed activities.

Coherence

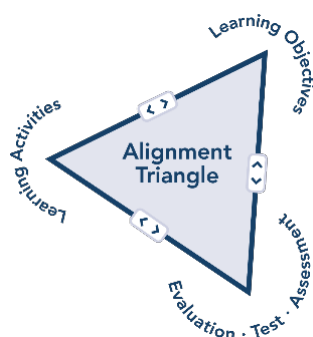


Figure 1 Annex 4 – Alignment Triangle

Coherence of the learning objectives (what ability we expect to observe in the end of training), the learning activities (what we do to reach the learning objectives) and the evaluation is essential. The purpose of alignment is partly: to ensure learning activities are created and conducted to achieve the relevant learning objectives (directed by action verbs); partly to ensure coherence between the evaluation and the what and how that the participant has practised during the learning activities.²

² Signe Skov (2015). Læringsorienterede kursusdesign (Eng.: Learning oriented Learning Designs)



Reflection and Experimental Learning

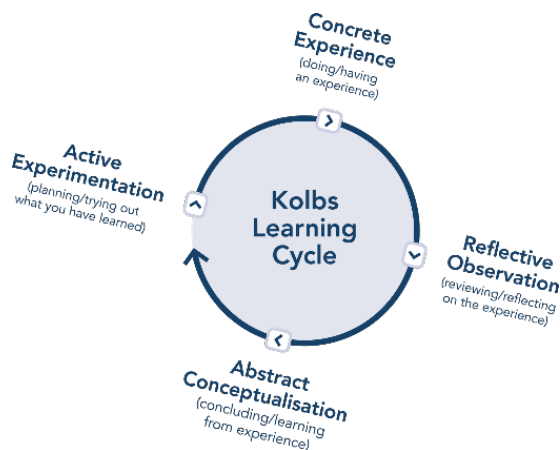


Figure 2 Annex 4 – Kolb's Learning Cycle

Reflection is an important part of the learning process and must be facilitated in all learning activities. Participants develop a positive attitude towards the subject and enhanced behaviours in the work situation when they succeed through trying things out on their own, bringing their relevant experience into play and using learning points from feedback.

Kolb's learning cycle³ illustrate four phases of the learning process:

- 1) active experimentation; where the participants test their understandings and abilities
- 2) experience; where the result of the action is detected
- 3) reflection; to what extend the result of the experimentation was expected,
- 4) conceptualisation; where participants conclude what worked well or what should be improved in the next experimentation phase

Note *Active experimentation is not only intended for practical training, as reflection and expressing one's understandings, thoughts and beliefs are also active experimentations. Therefore, the learning cycle is applicable in all learning domains (knowledge, skills, and ability).*

Feedback

The aim of feedback is to reduce the gap between the participant's current performance and a desired goal.⁴ Feedback is by far the most effective way to generate reflection and so learning.⁵

At the basic taxonomic learning level, feedback must be provided to correct faults and encourage the participants to engage further. At the advanced level, feedback is more about coaching participants to find their own solutions. Hints to participants helps them figure out how they can do better and how to modify and develop their knowledge and understanding relative to the learning objective.

On the advanced level, feedback must be conducted in a dialog where exploratory questions are the generator for the participants' reflections. (Examples are provided in the taxonomy in relevant sections).

Fidelity

³ David Kolb (1984). Experiential Learning. Experience as the Source of Learning and Development

⁴ John Hattie & Timperley (2007). The power of feedback

⁵ John Hattie & Gregory Yates (2014). Visible Learning and the Science of How We Learn



Fidelity is about creating training environments that are realistic and as similar to reality as possible. By focussing on creating fidelity in the training environment, the transfer of knowledge, skills, and abilities from the training situation to the actual work reality is facilitated.⁶

The level of fidelity should be a balance between, on the one hand, a supportive learning environment and, on the other hand, the need for realism in the learning situation.

Therefore, fidelity may be lowered in learning activities at the basic learning levels, where focus should be on both safety and learning environment that supports the participants development. When moving to the intermediate or advanced levels of learning, fidelity should be adjusted towards the actual work environment.

The GWO Taxonomy

The scaffolding of the GWO Taxonomy is the three learning domains: Knowledge, Skills, and Ability as illustrated in Figure 3 below.

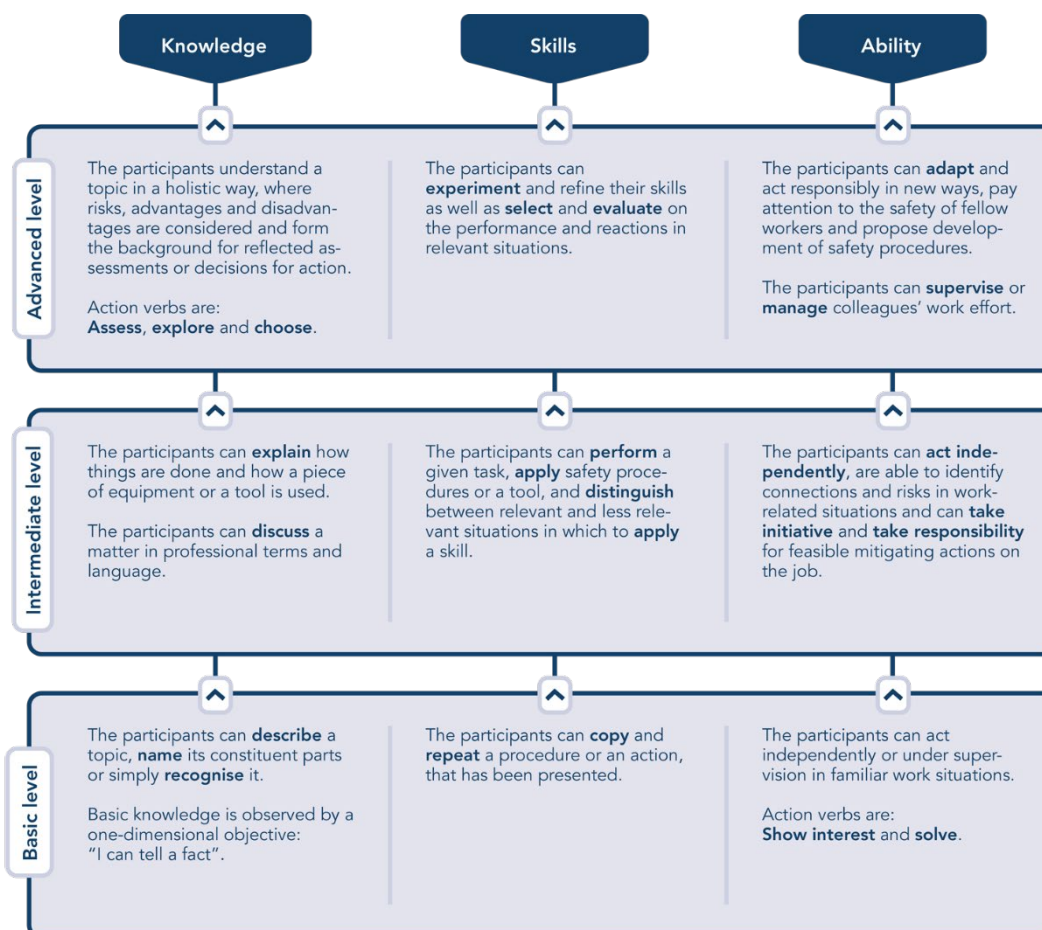


Figure 3 Annex 4 – The GWO Taxonomy – Condensed

For each domain and level, the relevant action verbs are defined with examples of learning objectives, description of learning processes, suggestions for learning activities and ways of evaluating the learning.

⁶ Bjarne Wahlgren (2010). Voksnes læreprocesser (Eng.: Adult Learning Processes)



1. The Knowledge Domain

1.1 Definition of Knowledge

Knowledge contains the following three aspects:

Type of knowledge involved: Knowledge about theory or knowledge about a topic or a field or within a profession.

The complexity of this knowledge; The degree of complexity and the predictability of the situation where this knowledge is mastered.

Understanding: The ability to apply knowledge in a context. For example, understanding is expressed when explaining a topic to others.

1.2 Knowledge at the Basic Level

Definition

Knowledge at the basic level implies that the participants are familiar with the given topic, are able to describe the topic, name its constituent parts or simply refer to the topic.

Basic level knowledge is observed by a one-dimensional objective: "I can tell a fact".

Action Verb	Examples of applying action verbs in a learning objective
Name	<p>The participants can name specific parts and items when presented to them.</p> <p>The participants can name the main components of a wind turbine.</p> <p>The participants can name different types of lifting.</p>
Recognise	<p>The participants can recognise signs and labels related to safety in a WTG.</p> <p>The participants can recognise common tasks, situations, tools, and signs.</p> <p>The participants can recognise the position of batteries in a circuit.</p>
Describe	<p>The participants can describe how to use a specific tool.</p> <p>The participants can describe known hazards in common workplace situations.</p> <p>The participants can describe where to seek guidance in typical foreseeable situations.</p>

How does the participant acquire knowledge at the basic level?

The key elements for acquiring knowledge on the basic level are reflection and active (psychological) engagement.



Reflection is essential for creating experiences and so learning. It facilitates participant understanding for example, when prompted to relate to, interpret and grasp the basic content. Furthermore, reflection helps to stimulate active participation in a more dynamic and varied learning process.

Participants need to actively engage in relevant activities to acquire and retain knowledge at the basic level. When answering simple questions, copying how to describe topics listed in the learning objectives and naming different objects and individual parts, participants' recognition of, and familiarity with, the subject at hand are increased.

What activities will facilitate the learning process for the participants at the basic level?

- 1) Short presentations or instructions, where the participants take notes, are followed by the participants completing a simple quiz or questionnaire on screen, paper or digitally where participants consider the topic and the learning points.
- 2) Simple games or exercises, where the participants develop a further understanding of the topic by deciding how or when to apply it.
- 3) Questions which challenge the participants to use their own words to describe and share understandings about a topic.
- 4) Discussions ensuring that the participants share experience and understandings. Suitable topics should be taken from learning objectives.
- 5) Feedback must be provided to correct faults and encourage the participant to engage further.

Evaluation methods in coherence with learning objectives and activities

- 1) Observation of the participant's performance during learning activities
- 2) Questions to assess to what extent the participant has understood the information presented or processed. These questions normally call for short answers recalled from memory.
- 3) Test – practical or theoretical
- 4) Games
- 5) Quizzes
- 6) Questionnaires aiming at the learning objects
- 7) Multiple choice tests or combination test answers



1.3 Knowledge at the Intermediate Level

Definition

The intermediate level is about the participants knowing how to behave or utilise tools and techniques. Knowledge at this level can be observed as the participants explain their understanding.

At the intermediate level, the participant can account for how things are done and what to do in commonly known situations in the professional context or can explain how a piece of equipment or a tool is used.

Action Verb	Examples of applying action verbs in a learning objective
Explain	<p>The participants can explain how the individual components affect each other and make up a whole.</p> <p>The participants can explain the relations between risks, procedures or processes in relevant environments and possible effects of these relations. (Risks and benefits).</p> <p>The participants can explain how chosen actions or procedures can mitigate risks or improve actual processes or procedures.</p>
Discuss	<p>The participants can discuss the current topic with colleagues and other personnel at hand including pros and cons, risks and possible (standardised) actions.</p>

How does the participant acquire knowledge at the intermediate level?

Individual reflection is essential to gain knowledge at the intermediate level. Participants need to both consider and test their understanding and to put it into play through dialogue and discussion.

Through assessing each other's answers participants re-visit topics which leads to enhanced learning outcomes.

Critical reflection is prompted when the participants are challenged to find correct answers by themselves. At the same time this fosters commitment and motivation.

Social interaction is important, because sharing perspectives and experiences helps to expand the participants' understanding and familiarity with the subject at hand.

Feedback is a particularly strong learning accelerator provided it is focused on what the participant has misunderstood, how this can be corrected and where improvement can be made.



What activities will facilitate the learning process for the participants at the intermediate level?

- 1) Activities promoting reflection through knowledge sharing, discussions, and competitions. Help and guidance should be provided when needed.
- 2) Creating presentations also encourages the participants to take initiative and be creative during their reflection.
- 3) Posing questions that lead the participants to reflect on the material or topic. How does one element fit with other or similar material? What other considerations are at play? What new actions may this new knowledge support?
- 4) Provide feedback on topics that must be correctly understood and applied. This typically includes safety rules and standard risk mitigation actions. To aid further understanding peer feedback can be introduced so the topic(s) is revisited and considered again by the feedback giver and the recipient.
- 5) Having participants assessing others answers or solutions to a given test or assignment.

Evaluation methods in coherence with learning objectives and activities.

- 1) Test or quiz questions as well as assignments that show how, and to what extent, the newly acquired understanding fits into the participant's own knowledge or experience.
- 2) Questions that investigate to what extent new information or knowledge corresponds to former understanding and how the new knowledge may be applied.



1.4 Knowledge at the Advanced Level

Definition

The advanced level is about participants having a holistic understanding of a topic, where pros and cons, risks, advantages, and disadvantages form the background for reflected assessments and decisions on actions.

Action Verb

Examples of applying action verbs in a learning objective

Assess

The participants can **assess** a situation to decide relevant and responsible action.

The participants can **assess** a situation or the behaviour of colleagues or peers to provide feedback or guidance.

Explore

The participants can **explore** material (including tool instructions, technical handbooks, and relevant guides) to find solutions to an actual problem or for development of own competences.

The participants can **explore** an occurrence to clarify causes or explanations.

Choose

The participants can **choose** the relevant actions in a situation based on assessment of the causality or the relation between causes and possible reactions.

How does the participant acquire knowledge at the advanced level?

Critical and constructive reflection is the foundation of deep knowledge and understanding.

Reflection is initiated and facilitated when the participant is faced with challenging questions or situations. When discussing or solving the challenge a broader perspective or a deeper understanding is gained.

Motivation, confidence, and curiosity to learn is facilitated when the participants are listened to. By being involved in learning activities and the process of developing and expanding their knowledge, participants can build on their current knowledge and experiences.

What activities will facilitate the learning process for the participants at the advanced level?

- 1) Learning activities built on participants' knowledge and experiences. Uncover existing and relevant experiences amongst the participants by questionnaires or presentations in plenum. Only with this information can the learning activities be sufficiently focused.
- 2) Use short group talks, presentations, or an in-depth quiz to explore relevant topics and increase the participants' curiosity. Exploring participants' experiences will motivate them while helping the instructor or the program to focus the presentations and assignments that follow.



- 3) Short presentation on the task or topic that challenges the participants with new perspectives.
- 4) A challenge or an assignment where the participants must reflect on their individual understandings and beliefs.
- 5) The participants produce a short video showing the setting, the challenges, and the solutions for a specific topic.
- 6) The participants engage in a role play that presents the setting, the challenges, and solutions of a specific topic. The participants must receive individual feedback on their performances.
- 7) Feedback at the advanced level should give the participants hints to help them figure out how they can do better and help to adjust and develop their knowledge and understanding.

Evaluation methods in coherence with learning objectives and activities

- 1) Questions at this level should make participants reflect on how the new mindset corresponds to their former understanding and how this may be applied in future work situations.
- 2) Questions could also look into participants' decision-making abilities within a given topic and whether a participant is able to make this decision alone.
- 3) By observing participants during learning activities and training sessions participant compliance with the learning or enabling objective may be assessed.
- 4) Assessment of knowledge may also be done in connection to skills-training activities, where relevant knowledge must be expected and applied.



2. The Skills Domain

2.1 Definition of Skills

Skills means what a person can do or accomplish. Skills contains the following aspects:

The type of skills involved are: practical, cognitive, creative, or communicative skills.

The level of complexity of the action to be carried out: the task or case in which the skill is to be used and the complexity of this task.

Communication: the communication that is required, the complexity of the message, to which target groups and with which channels.

2.2 Skills at the Basic Level

Definition

The basic level is about basic cognitive and practical motoric skills required by the participants to apply relevant instructions and procedures e.g. work instructions and manuals, to carry out tasks, and to solve routine problems using simple rules, tools and communication.

Action Verb

Examples of applying action verbs in a learning objective

Copy

The participants can **copy** and imitate an action presented by the instructor or other media.

Repeat

The participants can **repeat** actions or action steps again and again without further instruction or supervision.

How does the participant acquire skills at the basic level?

A calm and safe learning environment is a prerequisite for acquiring skills at the basic level. The participants must be able to focus only on what they are about to learn, therefore fidelity and simulated realistic work environment should be applied to a limited extend only.

The foundation of acquiring skills at the basic level is controlled and repeated practice of the actual skill. This means for example, that only a limited amount of reflection is required at this level.

What activities will facilitate the learning process for the participants at the basic level?

- 1) An action to be copied by the participants is presented or described. Afterwards the participants must practise the action.
- 2) The action must be repeated by the participant under supervision until the skill is achieved.



- 3) Feedback must be provided to correct faults and encourage the participant for further engagement. An exercise should only be intervened when serious errors or safety violations occur. This way the learning flow of actions steps is not interrupted.

Evaluation methods in coherence with learning objectives and activities

- 1) Skills must be observed and evaluated when the participants are practicing the actual skill. At the basic level, the focus of evaluation must primarily be on the ability to perform the actual skill and less on the fidelity.
- 2) The environment of the evaluation must be the same as the environment applied when the participants are practicing the skill.



2.3 Skills at the Intermediate Level

Definition

The intermediate level is about skill mastery to the extent that the participant can test the application of the skill and distinguish between relevant and less relevant situations to apply the skill in.

Action Verb	Verb Examples of applying action verbs in a learning objective
Apply	<p>The participants can apply a tool in relevant situations.</p> <p>The participants can apply safety standards and rescue devices in relevant situations.</p>
Distinguish	<p>The participants can distinguish between correct or incorrect actions to be taken in actual situations.</p> <p>The participants can observe and distinguish whether actions are following or not following actual rules and regulations.</p>
Perform	<p>The participants can perform a given task by following a set of instructions.</p>

How does the participant acquire skills at the intermediate level?

The participant must follow instructions to reach the learning objectives. Afterwards, both the effort and the result must be reflected upon – what happened, what made it work (or not work) and what could be done differently the next time?

Participants' active learning efforts during the exercises initiate and propel the learning process. The training exercises must have a focus on performing best practices and on the participants' reflection.

The participant's commitment, motivation, and learning must be increased by constructive feedback aiming at the development of the relevant skills.

Energy and dedication emerge when cooperating in groups where the participants must commit to the task and be mutual responsible for the learning process.

By decreasing the challenges and risks, the focus on learning can be supported while building confidence and creating the participants feeling of safety in the learning environment. On the other hand, by intensifying the environmental challenges and the risks in the simulation, participants may be challenged, fostering courage and determination.

What activities will facilitate the learning process for the participants at the intermediate level?



- 1) Short demonstrations of the skill followed by participants practise of how to apply the skill in various scenarios either by themselves, in pairs or in small teams.
- 2) Practicing the skill in a simulated environment where it should be possible to adjust the difficulty and fidelity of an exercise - e.g. waves or wind, working at heights, flames and heat.
- 3) Answering questions on the topic facilitates the necessary participant reflection. Examples of questions: How does this knowledge about an action fit with other or similar actions? What other knowledge does this key into? Which new actions can this new understanding support?
- 4) A test or quiz on the topic can also trigger participants' reflection. By assessing a peer's test results both participants revisit and reconsider the questions and answers.
- 5) Feedback is the strongest learning accelerator provided it is focused on what should be corrected and where or how improvement can be made. The participant must commit to the proposed improvements.
- 6) Working in small groups, where all participants are active and learn by creating new experiences, intensifies learning processes as participants must concentrate on both individual and collective achievements.

Evaluation methods in coherence with learning objectives and activities

- 1) In order to assess participant skills, these must be demonstrated and observed.
- 2) The participant must perform their skills in relevant cases or task-solving in an environment that simulates as closely as possible the work reality. 3) Evaluation activities must be as similar as possible and coherent to learning activities. Content-related surprises should be avoided in evaluation activities.



2.4 Skills at the Advanced Level

Definition

The advanced level is characterised by the participants' ability to experiment and refine the skills while evaluating and reflecting on their own behaviour and reactions in relevant situations.

Action Verb	Examples of applying action verbs in a learning objective
Evaluate	The participants can evaluate their own and other's performance in relation to the actual challenge, subject, or topic.
Select	The participants can select and perform proper action in task solving.
Experiment	The participants can experiment to find best solutions for new challenges.

How does the participant acquire skills at the advanced level?

The participant learns from practising a skill and reflecting on the process, as well as from receiving or giving feedback.

When the participant tries different solutions and reflects on the outcomes, the participant obtains the ability to select the best way of applying the skill. In addition, having to explain their experience to others strengthens their understanding.

At the advanced level, the participant often requires a significant degree of freedom to test how a skill is best applied in combination with other knowledge, skills, or abilities. When the participant works with little or no instruction, the participant develops self-confidence in the action.

With reference to the interrelation of fidelity and skills transfer, the closer the exercises are to work reality the better.

What activities will facilitate the learning process for the participants at the advanced level?

- 1) Exercises where participants practise the relevant skills.
- 2) Experiments.
- 3) Tests of participants' skills and understanding.
- 4) Group work.
- 5) Scenario-based projects and case work.
- 6) Discussions.



7) Games and simulations.

Note *All of the above activities should include feedback and supervision when needed.*

Evaluation methods in coherence with learning objectives and activities

- 1) In order to assess participant skills, these must be demonstrated by the participant and observed or measured.
- 2) In addition, the assessment should include questions aimed at exploring the participant's decision making process behind a chosen action.



3. The Ability Domain

3.1 Definition of Ability

Ability covers the capacity to act responsibly, safely, and independently or in cooperation with others to meet a challenge or to get the job done.

Ability contains the following aspects:

Application of knowledge and skills together with both personal and professional experience, attitude, and personal characteristics.

The complexity of the cooperative situations in which one can engage, e.g. familiar/unfamiliar situations, by oneself or under supervision/instruction, alone or in cooperation with others as well as the degree of unpredictability and changeability in these contexts.

Learning: the ability to take ownership for one's learning and that of others.

3.2 Ability at the Basic Level

Definition

At the basic level, the participant can act independently or under supervision in familiar work situations. The participant shows interest and takes responsibility to engage in the task at hand.

Action Verb

Examples of applying action verbs in a learning objective

Show Interest

The participants **show interest** or curiosity in the subject, topic, challenges, or solutions at hand.

The participants **show interest** and willingness to engage in a given task.

Solve

The participants can **solve** routine tasks under supervision.

The participant can **solve** routine tasks responsibly and will on their own initiative seek help or guidance when needed.

The participants can on own initiative take responsibility of **solving** routine tasks in familiar situations.

How does the participant acquire ability at the basic level?

By trying out solutions independently and by bringing relevant experience into play, the participant develops a positive attitude towards and a feeling of ownership of the subject and the solution.

By reflecting on how experiences and new information is best used to solve a given task, the participant finds out to what extent the skills, knowledge and attitudes are sufficient to get the things done properly.

Positive motivation is the driving force for the participant to engage in the learning activities.



What activities will facilitate the learning process for the participants at the basic level?

- 1) Case scenarios and practical exercises, where the participants try (with just sufficient supervision or instruction) for themselves.
- 2) Discussions where participants share expectations and attitudes toward e.g. a challenge, their professionalism in general, or the safety at the workplace and in the work community.
- 3) Feedback must be provided to correct faults and encourage the participant for further engagement. An exercise should only be intervened when serious errors or safety violations occur. This way the learning flow of actions steps is not interrupted.
- 4) A focused effort should be made to promote participant motivation and interest in taking responsibility and ownership of the work conducted. Topics could be the individual's role or part in the actual working community in relation to professionalism, work safety and mutual responsibility in the work conducted.
- 5) When possible, supervision and instructions must be reduced to challenge the participants to take initiative and practise on their own.

Evaluation methods in coherence with learning objectives and activities

The evaluation of participants' abilities requires participants to express their thoughts on, and attitudes to, a subject. This may be done through presentations of group reflections or by observing exercises that challenge participants to decide on an action and execute it.

Abilities must be observed and evaluated when the participants are practicing or demonstrating the actual ability described in the learning objectives.

The environment of the evaluation must be similar to the environment where the participants practised the actual ability.



3.3 Ability at the Intermediate Level

Definition

At the intermediate level, the participants commit to the task or context and can act independently in familiar and unfamiliar situations. They can recognise connections and relationships as well as identify risks in work related situations and take initiative for feasible mitigating actions.

Action Verb

Examples of applying action verbs in a learning objective

Take Initiative

The participants can **take initiative** to intervene when risks in relation to work safety are detected.

Take Responsibility

The participants can **take responsibility** for maintaining and applying tools and equipment in accordance with standing procedures.

The participants can **take responsibility** for reducing the risk of injury for themselves and others.

Act Independently

The participant can **act independently** in familiar and unfamiliar work-related situations and tasks.

How does the participant acquire ability at the intermediate level?

It requires a high level of commitment, readiness, and willingness to act for the participant to take responsibility and initiate actions. The participant develops independence, creativity, and a driving force to act and learn when one's expectations and abilities are active parts of discussions and exercises.

The participant's understandings and experiences should be brought fully into play without interference.

Feedback must be challenging and aim to inspire the participant to explore individual ways of thinking in the learning environment. Examples of such questions are: "when focusing on this task, what could you do differently next time?"; "what was your reason for choosing to do it this way?"; "what outcome could other approaches lead to?"

The participant should be urged to take responsibility for an action and encouraged to carry it out. Motivation and self-esteem emerge every time the action leads to either success or a valuable learning experience.

Learning activities should vary in familiarity and complexity to provide sufficient challenge for participants.

The participant develops the responsible attitude and mindsets when reflecting on: "what can I do to maintain or develop e.g. a safe work environment; a positive social community; a professional work community or a holistic attitude to the organisation or the operation of the work site?"

What activities will facilitate the learning process for the participants at the intermediate level?



- 1) Prompting the participants to bring their own understanding and experience into play to develop commitment, responsibility, and willingness to take the initiative when needed.
- 2) Training tasks that are as close as possible to work reality to ensure the interrelation of fidelity and transfer.
- 3) Simulations that intensify environmental challenges and balance risks wisely to foster courage and determination.
- 4) Scenario based assignments where participants acknowledge their roles and mutual responsibilities.
- 5) Feedback and questions should be focused on the participants' immediate experiences from the learning activity.
- 6) Discussions and other reflective activities should be facilitated to promote further reflection and mindset development for the participants.

Evaluation methods in coherence with learning objectives and activities

- 1) The evaluation of participants' abilities requires participants to express their thoughts and attitudes on a subject. This must be done through presentations of group reflections or by conducting exercises that challenge participants to take initiative, take responsibility and act without instructions or guidance.



3.4 Ability at the Advanced Level

Definition

Ability at the advanced level calls for broad experience and strong commitment by the participant. At this level, safety-awareness and responsibility is an instinctive part of the attitude of the participant.

The participants can apply their knowledge, skills, experience, and attitude (motivated by willingness, commitment, and curiosity) to adapt and act responsibly in new ways, supervise fellow workers on safety matters and propose development of work- and safety processes and -procedures.

There must be awareness for developing leadership or supervising abilities when feasible.

Action Verb

Examples of applying action verbs in a learning objective

Adapt

The participants can **adapt** to new processes and procedures - including new work colleagues, tools, and risk assessments.

Supervise

The participants can **supervise** the routine work of others and take responsibility for the evaluation and improvement of their work activities.

The participants can **supervise** individuals on relevant safety issues in the work situation.

Manage

The participants can **manage** less experienced colleagues by inviting them to take responsibility for their own task-solving to build and develop their individual commitment and responsibility.

How does the participant acquire ability at the advanced level?

The participant develops self-esteem, commitment, and responsibility when the participant meet new challenges in changing environments that require the participant to apply alternative solutions. In this way the participant explores and evaluates different solutions and their usability in changing environments.

The need to experiment and the right to fail during training are important parts of the learning process that allow the participant to find their own way and determine the practical limits for possible solutions.

Success and failure are equally important in this process with feedback supporting the ongoing processes of reflection.

When the participant practises assessing and supervising other participants, the participant commits to the challenge and the learning activity, thoroughly investigating the task and reflecting on how best to solve it.

By the assessment and supervision of others, the participants' personal and professional competencies are put in perspective and context. This helps to clarify their own abilities and potential learning needs.

Challenging Feedback and critical reflection are essential for the learning process at the advanced level.



What activities will facilitate the learning process for the participants at the advanced level?

- 1) Practise in unfamiliar work situations and environments without supervision or instruction.
- 2) Alternative challenges inside the scope or topic that engage multiple participants at different levels of experience playing different roles in the actual exercise.
- 3) New challenges that include experimental, trial and error exercises. These challenges should be conducted in an environment with as high a fidelity to a realistic work environment as possible.
- 4) Feedback at the advanced level should include questions aiming at establishing the participant's ability to reflect on the process as well as on the outcome of completed exercises and training activities. For example, what was successful and how could performance be improved?
- 5) Feedback provided on the solutions and performance at the end of all learning activities.

Evaluation methods in coherence with learning objectives and activities

- 1) Assessing the participants ability to perform a realistic task involving realistic action and decision making.
- 2) Observation of a participant's commitment and behaviour in action is necessary to assess the level of initiative, responsibility, professionalism as well as communications skills. The observation must be supported by dialogue that invites participants to share arguments or reflections.
- 3) To complement the observation and assessment, interviewing the participants on their impression of a fellow participant's performance may add depth to an assessment of their leadership ability.