TRAIN-THE-TRAINER

COURSE MANUAL

Inland Waterway Transport Education & Training

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1. GLOSSARY OF TERMS

In this Train the Trainer Course Manual, the following terms have the meanings set forth below:

Assessment
- Ongoing process of identifying what and how individuals are learning and providing a guide for the pace and nature of training, a judgment on the trainee's capabilities.

Assessment item
- Any discrete part of an exam or test.

Augmented reality
- An enhanced version of reality created by the use of technology to overlay digital information on an image of something being viewed through a device (such as a smartphone camera).

Best practice
- A method and/or a process used to establish the extent to which a learner has achieved particular knowledge, skills, attitude (competence), confirming that certain assessed learning outcomes achieved by the learner correspond to specific outcomes that are required for a module or qualification.

Blended Learning
- Describes a teaching scenario between media-supported presence teaching and pure online teaching.

Brainstorming
- A very good method for a situation where the aim is to expand people's thinking in an area and generate ideas.

Candidate
- A person undergoing training or assessment.

Candidate trainer
- A participant in the Train-the-Trainer course.

Case-study
- A capture of a real-life situation.

Collaborative learning
- A very effective training strategy as it encourages communication and teamwork, enables the sharing of knowledge and the meeting of different viewpoints and perspective, facilitates problem-solving and decision-making.

Competence
- The level of proficiency to be achieved for the proper performance of functions on board inland waterway vessels in accordance with the agreed standards or levels of knowledge, understanding and demonstrated skills.

Competency-based learning
- An approach that focuses on the mastery of learning outcomes.

Competency-based education
- A system of education based on trainees demonstrating their ability to act effectively in a job or situation.

Competency-based assessment
- A unit used to define and understand the knowledge, skills and attitude required to perform a job effectively.

Course
- A planned learning experience for an identified group of trainees.

Demonstration
- A widely used and effective method for training at all levels.

Discussion
- An effective method to encourage trainees to share information and compare points of view.

E-Assessment
- Offers a variety of new forms of assessment through electronic support easier for teachers. In addition to monitoring learning success, it also provides trainees with information on the status of their own learning process.

E-learning
- Learning conducted via electronic media, typically on the Internet. In particular, the term "e-learning" refers to an arrangement of digital media and virtual learning spaces. It can be used individually or also jointly in a group for competence development and education.

E-teaching (electronic teaching)
- Involves computational systems that communicate and cooperate with trainees at many levels. These systems might use the World Wide Web or CD/DVD-ROM and asynchronous learning environments to provide lectures outside the classroom.

Evaluation
- Judgment of the worth or value of an activity or event with a view to identifying ways in which such activities or events can be improved in the future.

Examinee
- A person undergoing an exam.

Examiner
- A person who evaluates knowledge, reactions or qualifications, and who administers examinations in schools, colleges, or universities on behalf of an official institution (e.g., Naval Authority).

ILIAS
- "Integrated Learning, Information and Work Cooperation System" is an open-source web-based learning management system (LMS). It supports learning content management (including SCORM 2004 compliance) and tools for collaboration, communication, evaluation and assessment.

Instructor
- A person who instructs in a practical training environment, creating situations in which professional hands-on experience can be gained. Although often used as a synonym for 'teacher', an instructor may have teaching aims and methods that are often quite different.

Learning
- Involves acquiring new knowledge, skills and attitudes that result in some change of the trainees' ability to do something.

Learning Objectives
- Specific action statements which specify what the trainee will be able to do, say or think, as a result of attending a course or a particular session.

Lesson Plan
- A written document that identifies how the instructor intends to incorporate the essential elements into a lesson he/she is about to teach.

The Learning Management System (LMS)
- Is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, or learning and development programmes.

Mixed reality
- A blend of physical and digital worlds, unlocking natural and intuitive 3D human, computer, and environment interactions, based on advancements in computer vision, graphical processing, display technologies, input systems, and cloud computing.

Operator
- A person who operates a training vessel or simulation system in practical training environments.

Provider
- A training or educational institution that offers simulator-based training courses. Providers are responsible for ensuring that the content, organisation and implementation of a course comply with set standards. They also ensure that staff are well qualified, i.e. suitable and experienced, based on standard criteria.

SCORM
- Stands for Sharable Content Object Reference Model, a set of technical standards for e-learning software products. SCORM tells programmers how to write their code so that it can "play well" with other e-learning software. It is the de facto industry standard for e-learning interoperability.

Skill
- A task or group of tasks performed to a specified level of proficiency which typically involves the manipulation of tools and equipment, or expertise that is knowledge or attitude-based.

Student
- A person who is enrolled in an educational institution.

Teacher
- A person who teaches in an educational programme, and who is committed to providing a learning environment in which knowledge and competencies can be acquired.

Teaching method
- A principle and/or an approach used for learning/instruction/training.

Teaching aid
- An object (such as a book, picture, or map) or device (such as a DVD or computer) used by a trainer to enhance or enliven trainees' instruction.

Trainee
- The collective term for an individual enrolled in an educational programme. A trainee may be referred to as an apprentice, trainee, student, or examinee.

Trainer

- An individual who teaches in an educational programme and whose job entails assuming various roles, e.g. instructor, teacher, examiner, and assessor. Trainers must be qualified and experienced in both inland navigation and teaching, and must possess the specific knowledge and pedagogical skills to be responsible for different types and levels of training.

Vestibule Training

- A training method in which trainees learn on the actual or simulated equipment they will use on the job, but are trained off the job (perhaps in a separate room or simulator).

Virtual reality

- A three-dimensional, computer-generated environment which can be explored and interacted with by a person who becomes part of this virtual world or is immersed within this environment and whilst there, is able to manipulate objects or perform a series of actions.

2. TRAIN THE TRAINER MANUAL FRAMEWORK

2.1 AIMS

The Train the Trainer Course Manual, called hereinafter TTT, is designed to facilitate the delivery of training in the competence standards required, promote awareness, enhance knowledge and best practice methods for the implementation of Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN-Standards of competence adopted by Delegated Directive (EU) 2020/12.

The primary principle behind this TTT is to help inland navigation education & training institutes and their teaching staff, to organise the development of education & training courses in a way to give integrated training to crew members working on board inland navigation vessels. The TTT will also assist the education & training institutes to enhance their existing capabilities so that the final outcome adds value to the skills of the crew member for its application on board a vessel in a real working environment.

This TTT is a guideline, which can bring uniformity in the world of inland navigation education & training system. The TTT is open to adjustments and can be amended depending on different situations, persons, learning needs and learning goals.

The knowledge, experience, skills and sincerity will always act as the lynchpin in transferring knowledge and form abilities and competencies as the primary part of training. The quality of the trainer is thus the key to efficacy of transfer of knowledge to the trainees. They not only need to be qualified, but must also have a sound understanding of the working environment on board a vessel. The sensitivity on part of the trainer will be an important factor to link the material for education & training (be it on a simulator, on board a vessel or in the classroom) with the psychology of a crew member in order to create a situation as close to a real-life scenario as is possible.

For the course to be successful, as desired under this TTT, considerable attention will need to be paid to resources such as:

- Qualification and experience of trainers;
- Additional staff to execute the education & training function;
- Infrastructure – for simulation, lectures, discussions, e-learning and practical activities;
- Equipment;
- Teaching & training materials.

The TTT includes technical aspects of blended teaching and training that have a direct relation with the inland navigation world.

The topics that have been covered in this TTT have been chosen in such a way as to provide a valuable introduction for those who have little experience in teaching and training and also as a very useful refresher for experienced trainers. In addition, those whose teaching experience has been limited to lecturing will gain considerable exposure, as they will explore the world of inland navigation scenarios along with a variety of face-to-face and blended teaching and training techniques.

The Course Manual involves both conventional and innovative teaching and training methods, participative training techniques (such as task solving, both individually and in groups, in the classroom or on e-learning platforms), practical scenarios, simulation exercises involving 'role playing', demonstrative and practical activities.

Hence the scope is to:

- Establish a reliable training programme for the trainer that will include a combination of: *blended learning, simulation training, practical activities based on real-life scenarios, special working environment on board a vessel and the human element and psychology of learning*;
- Foster sustainable training skills to the trainer within the changing inland navigation environment;
- Acquire training abilities and competencies that include the psychology of learning and training.

To sensitise the future trainer to old and/or new innovative technology and tools, it is recommended that exercises be controlled by an instructor and, initially, that the trainees be allowed to become familiar with the equipment, the controls and the instrumentation provided. The equipment and environment fidelity will be discussed with the trainees.

2.2 Objectives

The objective is to develop a sensitive trainer who fully understands the personality of a crew member working onboard an inland navigation vessel, the importance of blended learning, practical activities in training, and pedagogical skill in order to impart sound and practical training to participants. On completion of the course, the future inland navigation trainers should be able to contribute in formulating a training policy

both at the macro, as well as the micro level. Finally, the future trainers should have a basis for evaluating the whole process of teaching and training.

Thus, the main objective of the course is directed at promoting the knowledge, abilities, competencies and attitudes that the "ideal" trainer should possess by:

Acquiring training awareness where:
- There is a process of identifying training needs;
- S/he has an understanding of the end result of training;
- The potential benefits of training are clear and conveyed to the trainees; and
- The relationship of training to the real-world scenario onboard ships is always kept at the forefront.

Acquiring training skills related to:
- The process of adult learning;
- Psychology of learning;
- Parameters of course design;
- Methodology of teaching techniques;
- Instructor-trainee relationship and presentation proficiency;
- Assessment of trainees;
- Evaluation of the course.

Acquiring managerial skills and aptitudes relating to:
- Planning;
- Organising;
- Identifying and providing resources;
- Leadership;
- Interpersonal relationships;
- Communication skills.

After finishing the course, trainees should be able to meet the requirements as specified in Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence, adopted by Delegated Directive (EU) 2020/12. It includes the planning and preparation of effective teaching and instruction, the selection of appropriate methods of instruction and teaching materials, and the evaluation of the teaching and learning process.

In addition, this Course Manual will also assist in giving the prospective trainers an understanding of the psychology of learning in order to design and conduct scenario-based training programmes, including exercises and detailed briefing and debriefing. The course will require the participants to actually plan a programme, set up exercises and conduct them in a manner in which any appropriate tool, equipment or installation is used to its maximum potential to enhance the professional development of crew members.

2.3 Entry standards

The qualification and experience of the trainer will play an important role, as will its application to any course. Although it is not only understood but implied as well, an inland navigation background is a must, but by itself this cannot be considered sufficient. What is necessary is an aptitude for inland navigation training, an aptitude to pass on knowledge and an open mindset and sensitivity to adjust the training towards the needs of the participants.

Trainers wishing to deliver training in the competence standards required by Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence should already have the necessary technical knowledge and be qualified in the task for which training is to be conducted, meet the requirements of Directive (EU) 2017/2397, Art. 18, adopted by Delegated Directive (EU) 2020/12.

Some general criteria for admission are:
- Willingness to act as a Trainer in the future;
- Adequate proficiency in English;
- Basic skills in IT and e-learning;
- Experience in inland navigation; and
- Track record of interest in learning and training.

2.4 Course certificate

If the course includes an appropriate assessment of the trainee's ability to act as a trainer, a certificate or document will be issued to indicate that the holder has successfully completed the TTT course.

2.5 Course intake limitations

To make the training course effective for trainers' development, the number of participants in the class should not exceed fifteen (15). As the course contains practical activities based on simulation, group discussion, group exercises, as well as the use of tools/exercises, the total number of the participants should not be less than six (6) as otherwise it will be difficult to promote active discussion within the group.

2.6 Instructors' requirements

The course should normally be conducted by experienced trainers with background knowledge of the shipping industry and experience of inland navigation education and training. It is recommended that at least one member of staff should have undergone pedagogic training.

Trainers should:

- Have, at least, basic IT skills and basic knowledge in working on an e-learning platform;
- Be appropriately qualified in the technical aspects of their subjects and/or the holder of the certificate of competence as a deck crew member on board of inland vessel; and
- Be the holder of an approved: "Train the Instructor certificate" and "Train the Evaluator certificate".

Course coordinator

It is important that an experienced person amongst the trainers, preferably someone with experience in course and curriculum development, is given the responsibility of coordinating the delivery of the course. Such a person is often termed a "course coordinator". Trainers involved in presenting the course will need to be properly briefed about the part of the course they will be dealing with by the course coordinator, and a system must be set up for checking the material they may be required to prepare. The course coordinator should consider monitoring the quality of teaching and training in such areas as variety and form of approach, relationship with trainees, and communicative and interactive skills, where necessary.

2.7 "Technical content"

The TTT, in terms of technical content, comprises seven learning modules:

- Module 1: Navigation;
- Module 2: Operation of craft;
- Module 3: Cargo handling, stowage and passenger transport;
- Module 4: Marine engineering and electrical, electronic and control engineering;
- Module 5: Maintenance and repair;
- Module 6: Communication; and
- Module 7: Health, safety and environmental protection.

2.8 Course outline and timetable

It is recommended that a full physical 5-day Train the Trainer programme (Annex 1A) be designed for inexperienced trainers who need to develop their teaching and training skills and confidence to teach and train adults in the workplace, and a blended learning programme (2 days of online training and 3 days of practical activity) (Annex 1B) be designed for experienced trainers.

The programmes provided in Annexes 1A and 1B are for information and guidance and may be revised prior to delivery of the course by the course organisers and trainers. Thus, it is up to the responsible organisations / trainers to devise a more accurate plan, schedule or programme for their training courses. Nevertheless, it is expected that to convey the contents of the full course book of the TTT, the plan developed should not be significantly different from the proposed plans in the annexes.

The **lesson plan** is intended to give trainers a general idea on how to create their lessons and training sessions for the various competences. The template in Annex 2 can be used for every competence and adjusted as suitable for any inland navigation education & training institute to use.

2.9 Training facilities and equipment

The success of any education and training programme depends heavily on thorough and effective preparations. It is vital that sufficient time and resources are devoted to preparation. Preparation not only involves matters concerning administration or organisation, but also includes the preparation / customisation of any course notes, drawings, sketches, PowerPoint presentations, practical scenarios, e-learning materials, etc. as may deemed to be necessary and as may increase the instructor's effectiveness as a trainer.

For **delivery of the main lectures** and interactions between trainers and participants, a suitable classroom is required with desks or tables and chairs. It should be possible to move the furniture around so that a variety of room arrangements can be used. Ideally, extra rooms will be available for when the class is split into groups, since each group should have a separate space in which to work.

The main room will preferably be equipped with a whiteboard, a flipchart, writing materials, a computer projector for computer-based presentations and e-learning training, with sound system including microphones for improved communication, etc. Electrical sockets should be located so that the equipment can be positioned safely.

Group rooms should be provided with tables, chairs, some form of board and writing materials. It is important that the following teaching aids are available for trainees: the trainer's manual, the course manual, publications, audio-visual equipment, e-learning platform, any new, innovative technology relevant to instruction, video camera, or any other similar material at the discretion of the training provider and administration. The video camera is not an essential requirement for the course but if one is available, it can be a useful aid.

For the **practical training**, depending on the module, use of the following training facilities, equipment and teaching aids is mandatory:

- **Module 1: Navigation:**
  - **A training vessel / different types of inland vessels** (for berthing and departure manoeuvrings, VHF and intercom communication, convoy set up and disentanglement manoeuvring and anchor manoeuvring, taking appropriate action after a collision, assessing the damage and controlling the situation, navigating safely on a given short route, under certain conditions complying with all regulations in force, etc.);
  - Or an **approved full mission ship-handling simulator** (e.g. for planning a journey and conducting navigation in a difficult situation, Radar, ECDIS, loading and discharging of liquid dangerous goods, engine room simulator);
  - **Videos, images** (to describe winches, bollards, ropes and wires considering relevant work safety measures including the use of personal protective and rescue equipment), **software, CBTs** (e.g. to present characteristics of main sea ports and European inland waterways, ports and terminals);
  - **Model vessels**, etc.

- **Module 2: Operation of the craft:**
  - **A training vessel / different types of inland vessels or approved full mission ship-handling simulators** (to practise the use of deck equipment, anchor and winches, etc.);
  - **Demonstration videos, images, software, CBTs** (e.g. to describe the deck equipment, anchor and winches, and how they can be operated, etc.);
  - **Model vessels** (showing their different parts and describing the function of each part);

- **Module 3: Cargo handling, stowage and passenger transport:**
  - **A training vessel / different types of inland vessels or/and approved full mission cargo handling simulators** (to practise reading gauge marks, opening hatches, practise cleaning tanks, safety, loading procedure, etc.);
  - **Demonstration videos, model cargo handling equipment, images, software, CBTs** (e.g. to explain different types of cargo, (un)loading, safety, preparations, cleaning the tanks or to learn how to make a stowage plan and calculate the stability of different types of vessels).

- **Module 4: Marine engineering and electrical, electronic and control engineering:**
  - **A laboratory equipped with specific simulators** and/or;
  - **A training ship / different types of inland vessels** (to learn and practise how to start the boiling systems up to 700C, the recirculating pump in order to preheat the main engine, how to open the cooling system of the main engine and shut down the boiling system when the temperature reaches the specified value, how to monitor the generator's parameters (voltage, frequency and phase), parallel connection of the generators, to practise on telegraph remote controllers of the main engines, to monitor the starting / shutting down procedure of the main engine, to execute safe maintenance activity, etc.);
  - **A workshop equipped with appropriate teaching aids, machines and installations** (to learn and practise various specific operations, see above).

- **Module 5: Maintenance and repair:**
  - **A training vessel / different types of inland vessels** (to learn how to differentiate between various types of damage of machines, mechanisms and ship structures, to learn how to correctly follow the diagnostic and repair procedures and use the proper technologies for maintenance and repair, etc.);
  - **A workshop equipped with demonstration videos, full machines and installations** (e.g. to learn how to diagnosis and repair stationary and moving parts of an engine, electrical machines and devices, propellers and turbines).

- **Module 6: Communication:**
  - **A communication laboratory equipped with communication didactical materials and devices** (Standardized UNECE Vocabulary for Radio-Connections in Inland Navigation, RIVERSPEAK - EDINNA Standard Inland Navigation Communication Phrase;
  - **A training room / a simulator** (equipped with an Inland ECDIS, a radio-telephone, an AIS system, to practise radio communication with real VHF devices).

- **Module 7: Health, safety and environmental protection:**
  - **A laboratory / training facility equipped with specific equipment, devices and tools** (to observe and practise activities related to safe working procedures, emergency, fire fighting, pollution prevention situations, safety and security measures on board, damage control plans, etc.);
  - **A training ship / different types of inland vessels** (for real-life simulations and drills, such as man overboard, fire fighting / oil spill drills, etc).

3. DETAILED COURSE OUTLINE

3.1 Overview

One aspect of the TTT course is to familiarise the Trainers with pedagogical and effective teaching and training styles. This section presents short instructions on teaching techniques. Poor preparation is a sure way to lose the interest of a group, in particular trainees. Preparation involves a number of activities such as full identification and appreciation of the subject to be delivered and preparations for its effective delivery. Also, identification of all other aspects discussed such as training resources, ensuring that the venue and its amenities are appropriate, etc., together with support staff necessary for its operation are essential.

3.2 Preparations

It is essential to use a "**lesson plan**", which can provide a simplified format for coordinating lecture notes and supporting activities (see Annex 2). The lesson plan breaks the material down into identifiable steps, making use of brief statements, possibly with keywords added, and indicating suitable allocations of time for each step. The use of audio-visual material should be included at the correct point in the lecture with an appropriate allowance of time. The audio-visual material should be test-run prior to its being used in the lecture. Trainers are recommended to check the rooms to be used before the lecture is delivered, to make sure that all the equipment and apparatus are ready for use and that any support staff are also prepared and ready. In particular, trainers are advised to check that all black/white/smart boards are clean and that a supply of writing and cleaning materials is readily available. If exercises require extra resources such as post-it notes, breakout areas, etc. trainers should ensure that all these resources are readily available before the start of the training, in addition to the core course material and relevant presentations.

A successful lesson plan addresses and integrates three key components:

- Objectives for trainee learning and training;
- Teaching/learning and training activities;
- Strategies to check trainee's understanding.

Trainers are highly recommended to explain to trainees the six steps to guide them when they create their lesson plans. Each step is accompanied by a set of questions meant to prompt reflection and aid the trainers in designing their teaching, learning and training activities.

Thinking Level	Description. Action Verbs
Remember	Recognising or recalling knowledge, facts or concepts. **Verbs:** *define, describe, identify, label, list, match, name, outline, recall, recognise, reproduce, select, state, locate.*
Understand	Constructing meaning from instructional messages. **Verbs:** *illustrate, defend, compare, distinguish, estimate, explain, classify, generalise, interpret, paraphrase, predict, rewrite, summarise, translate.*
Apply	Using ideas and concepts to solve problems. **Verbs:** *implement, organise, dramatise, solve, construct, demonstrate, discover, manipulate, modify, operate, predict, prepare, produce, relate, show, solve, choose.*
Analyse	Breaking something down into components, seeing relationships and an overall structure. **Verbs:** *analyse, break down, compare, select, contrast, deconstruct, discriminate, distinguish, identify, outline.*
Evaluate	Making judgments based on criteria and standards. **Verbs:** *rank, assess, monitor, check, test, judge.*
Create	Reorganise diverse elements to form a new pattern or structure. **Verbs:** *generate, plan, compose, develop, create, invent, organise, construct, produce, compile, design, devise.*

Table 1 Thinking Levels of Bloom's Revised Taxonomy (adapted)
Source: https://thepeakperformancecenter.com/educational-learning/thinking/blooms-taxonomy/blooms-taxonomy-revised/

(1) Identify the learning objectives

The first step is to determine what the trainer wants the trainees to learn and be able to do at the end of the learning and training session. A **learning objective** describes *what the trainee will know or be able to do after the learning and training session* rather than what the learner will be exposed to during the instruction (i.e. topics). Typically, it is written in a language that is easily understood by trainees and is clearly related to the programme learning outcomes.

Bloom's Revised Taxonomy of Educational Objectives is a useful resource for crafting learning objectives that are demonstrable and measurable.

(2) Plan the specific learning and training activities

When planning learning and training activities, trainers should consider the types of activities trainees will need to engage in, in order to develop the skills and knowledge required to demonstrate effective learning and training. Learning and training activities should be directly related to the learning objectives of the course, and provide experiences that will enable trainees to put what they have learned into practice, and gain feedback on specific progress towards those objectives.

The trainer is recommended to prepare several different ways of explaining the material (real-life examples, analogies, visuals, etc.) to catch the attention of the trainees and appeal to different learning styles. The trainer should estimate how much time he/she will spend on each, save time for extended explanation or discussion, but also be prepared to move on quickly to different applications or problems, and to identify strategies that check for understanding.

The following questions can help the trainer design the learning and training activities he/she will use:

- *What will I do to explain the topic?*
- *What will I do to illustrate the topic in a different way?*
- *How can I engage trainees in the topic?*
- *What are some relevant real-life examples, analogies, or situations that can help trainees understand the topic?*
- *What will trainees need to do to help them understand the topic better?*

Many activities can be used to engage trainees. The activity types (i.e. what the trainee is doing) and the examples provided in Annex 3 are by no means an exhaustive list, but are intended to help the trainer in thinking through how best to design and deliver high impact learning experiences for trainees in a typical lesson or training session.

It is important that each learning activity in the lesson or training session is aligned to the learning objectives, meaningfully engages trainees in active, constructive, authentic, and collaborative ways, and proves useful where the trainee is able to take what they have learnt from the training activity and use it on the job on board the vessel.

(3) Plan to assess trainee understanding

After the trainer has explained the topic and illustrated it with different examples, they need to check for trainee understanding.

Assessments (e.g. tests, problem sets, practical demonstrations) provide opportunities for trainees to demonstrate and practice the knowledge and skills articulated in the learning objectives, and for trainers to offer targeted feedback that can guide them on how to improve teaching and training.

(4) Plan to sequence the lesson in an engaging and meaningful manner

Robert Gagne proposed a 9-step process called the events of instruction, which is useful for planning the sequence of training. Using Gagne's 9 events in conjunction with Bloom's Revised Taxonomy of Educational Objectives aids in designing engaging and meaningful instruction.

Figure 1 Gagne's nine events of Instruction
Source: https://www.coursearc.com/gagnes-nine-events-of-instruction/

I. Gain trainees' attention:

- Present a story or a problem to be solved;
- Utilise ice breaker activities, current news and events, case studies, YouTube videos, and so on. The objective is to quickly grab trainee attention and interest them in the topic;
- Utilise technologies such as e-learning platforms, VR, AR and surveys to ask leading questions prior to training session, survey opinion, or gain a response to a controversial question.

II. Inform trainee of objectives:

- Include learning objectives in lecture slides, the syllabus, and in instructions for activities, simulations, projects and papers;
- Describe required performance;
- Describe criteria for standard performance.

III. Stimulate recall of prior knowledge:

- Help trainees make sense of new information by relating it to something they already know or something they have already experienced;
- Recall events from previous lectures, integrate results of activities into the current topic and/or relate previous information to the current topic;
- Ask trainees about their understanding of previous concepts.

IV. Present new content:

- Utilise a variety of methods including lectures, readings, simulations, activities, projects, multimedia, etc.;
- Sequence and chunk the information to avoid cognitive overload;
- Blend the information to aid in information recall;
- Bloom's Revised Taxonomy can be used to help sequence the lesson by helping you chunk it into levels of difficulty.

V. Provide guidance:

- Advise trainees of strategies to aid them in learning content and of resources available;
- Provide instructional support as needed – as scaffolds (cues, hints, prompts) which can be removed after the trainee learns the task or content;
- Model varied learning strategies – mnemonics, concept mapping, role playing, simulation, visualising, etc.;
- Use examples.

VI. Practise:

- Allow trainees to apply knowledge in group or individual activities;
- Ask deep-learning questions, make reference to what trainees already know or have them collaborate with their peers;
- Ask trainees to reiterate information they have learned and practised;

- Facilitate trainee elaborations – ask them to elaborate or explain details and provide more complexity to their responses.

VII. Provide feedback:

- Provide the setting and facilitate the feedback/debriefing;
- Consider using feedback highlighting common errors, give examples or models of target performance, show trainees what you do not want;
- Consider implementing peer feedback;
- Require trainees to specify how they used feedback in subsequent works.

VIII. Assess performance:

- To evaluate the effectiveness of the instructional events, test to see if the expected learning outcomes have been achieved;
- Utilise a variety of assessment methods including exams/quizzes, written assignments, simulations, practical activities, projects, etc.

IX. Enhance retention and transfer:

- Allow trainees to apply information to personal contexts;
- Provide opportunities for trainees to relate course work to their personal experiences;
- Provide additional practice.

(5) Create a realistic timeline

Experienced trainers know how easy it is to run out of time and not cover all of the planned points to be covered. A long list of learning objectives is not realistic, so it should be narrowed down to two or three key concepts, ideas, skills or competencies the trainer wants trainees to learn. Also, very often trainers need to adjust their lesson plan during the class or training session depending on what the trainees need. Having additional examples or alternative activities will also allow trainers to be flexible. Here are some strategies for creating a realistic timeline:

- *Estimate how much time each of the activities will take, then plan some extra time for each;*
- *When you prepare your lesson plan, next to each activity indicate how much time you expect it will take;*
- *Plan a few minutes at the end of class to answer any remaining questions and to sum up key points;*
- *Plan an extra activity or discussion question in case you have time left;*
- *Be flexible – be ready to adjust your lesson plan to trainees' needs and focus on what seems to be more productive rather than sticking to the original plan.*

(5) Develop a conclusion and a preview

At the end of the lesson or training session, the trainer should go over the material covered by summarising the main points of the lesson or training session. This can be done in a number of ways: the trainer can state the main points himself/herself ("*Today we talked about/practised…*"), or can ask a trainee to help him/her summarise them, or the trainer can even ask all trainees to write down on a piece of paper what they think were the main points of the lesson and/or training session. Next, the trainer can review the trainees' answers to gauge their understanding of the topic and then explain anything that was unclear in the following session. The lesson or the training session can be concluded not only by summarising the main points, but also by previewing the next topic. This preview will pique trainees' interest and help them connect the different ideas within a larger context.

3.3 Delivery

On the **delivery side in the classroom**, trainers should:

- **Always face the participants they are talking to** and avoid talking with their back to the group;
- **Talk clearly and sufficiently loudly** to reach everyone;
- **Maintain eye contact with the whole group** as a way of securing and holding their interest (i.e. do not look continuously at one particular person, nor at a point in space);
- People are all different, and they behave and react in different ways. An important function of a trainer is to **maintain interest and interaction between members of a group**;
- **Emphasise some points, statements or facts** that are more important than others. To ensure that such points or statements are remembered, they must be restated a number of times, preferably in different words;
- If a white/smart board or flipchart is to be used, any **writing on it must be clear and large enough** for everyone to see. Trainers are recommended to use colour to emphasise important points, particularly in sketches;
- **Break the lecture up into different periods of activity to keep interest** at its highest level. Speaking, writing, sketching, use of audio-visual material, questions and discussions can all be used to accomplish this. When a group is writing or working on exercises, trainers should walk amongst the group, looking at their work and provide comment or advice to individual members of the group when necessary;

- **Not allow individual members of the group to monopolise the activity**, but they should ensure that all trainees have a chance to express opinions or ideas;
- If addressing questions to a group, trainers must not ask them collectively; otherwise, the same person may reply each time. Instead, they should **address the questions to individuals in turn**, so that everyone is invited to participate;
- It is important to **be guided by the training plan/ programme content** and not to be tempted to introduce material which may be too advanced, or which may contribute little to the course objective; and
- Finally, **effective preparation makes a major contribution to the success of a lecture**. Things often go wrong; preparedness and good planning will contribute to putting things right. Poor teaching or training cannot be improved by good accommodation or advanced equipment, but good teaching and training can overcome any disadvantages that poor accommodation and lack of equipment can present.

Online content delivery is one the most challenging – as well as one of the most important – aspects of developing an online course. Content is the heart of any course, so how content is presented to trainees strongly impacts their success and satisfaction. The best way to deliver content varies from course to course, but there are several best practices that can be used to ensure trainees are learning the content they need to succeed, regardless of the platform the trainer chooses to deliver that content on. Many of the best practices in online content delivery are the same as those in face-to-face content delivery.

- **Match to the curriculum.** Trainers are advised to tie the learning objectives to the various learning and training activities and assessments in their course and report track performance on assignments, and against learning objectives;
- **Organise your lectures logically.** Trainers should be clear and logical in how they present course material to help trainees understand the point of each lecture, as well as make the content easy to follow and recall;
- **Make your content engaging.** In both face-to-face and online environments, it is crucial to engage trainees with the course. Making the course interesting not only motivates trainee work, it also promotes trainee success. This can be done by incorporating interesting anecdotes, videos, and examples into lectures;
- **Deliver your content consistently.** Trainers must be aware that trainees in an online course rely on the instructor to follow the established course schedule and to deliver the course within the scheduled time frame. The online trainer is expected to make schedule adjustments as needed to manage special circumstances;
- **Be concise.** When creating lectures, trainers are advised to include only what trainees absolutely need to know to be successful in the course and avoid spending too much time on minor details. Establishing a pattern of course activity and communicating this sequence to the trainee enables the learner to develop a plan of study to address the requirements of the course. This course schedule and pattern also helps the trainer to contain the course-related activities to an appropriate duration and workload;
- **Stay focused.** Trainers are recommended to stay focused as they develop the lecture. Discussing one major topic per lecture and focusing on providing a thorough explanation of that topic prevents content overload and helps trainees focus on the most important points;
- **Be brief.** Trainees' attention spans are much shorter online than in a face-to-face environment. Breaking long lectures down into approximately 7-minute segments (also called chunking) increases the likelihood that trainees will pay attention to you and retain crucial information;
- **Present your content visually whenever possible.** Trainers are recommended, whenever possible, to present the course content visually as opposed to textually. Trainees are more likely to stay engaged in an online course that avoids blocks of text and primarily uses visuals to describe content;
- **Engage trainees.** Trainers are recommended to provide the means to deliver high quality digital learning applications fully integrated into any course. The user interface should be friendly and accessible, confusion or discouragement of trainees and instructors should be avoided. Progress reports and task lists will keep trainees fully up-to-date of their status against their goals at all times;
- **Practise Proactive Course Management Strategies.** The online trainer can help create a successful learning experience by practising proactive course management strategies. These strategies include, but are not limited to, monitoring assignment submissions, communicating and reminding trainees of missed and/or upcoming deadlines and making course progress adjustments where and when necessary;
- **Use formative assessment.** Formative assessment provides immediate feedback on performance, supporting learning and training in the assessment experience. Projects, discussions, activities and various other formats support peer assessment and trainees are encouraged to reflect on their progress against their own goals in their personal portfolios;

- **Use summative assessment.** It provides real-time data reporting for assessments and tools to develop and deliver valid and reliable summative assessments. The summative assessments must be valid and reliable; comprehensible by trainers, instructors, trainees and assessors; able to deal with a range of achievement levels; and free from adverse emotional impact on the trainee;
- **Plan for the Unplanned.** Online learners look to the trainer as their main source of course information and progress. If a trainer will be unable to log into the course for several days (e.g. due to a blackout), he/she is advised to give one week's notice to the trainees. In emergency cases, trainers are recommended to notify trainees as soon as possible if they will need to be away from the course and when they will provide additional course operation information. A few simple activities include:
  1. Develop and plan a communications strategy for managing brief and more significant interruptions to the course operation;
  2. Communicate to trainees how course interruption information will be communicated;
  3. Clearly define for the trainees the nature of the interruption, the anticipated duration, any impacts on course operation or activities and when you expect to resume course participation;
  4. Arrange with a departmental staff member or colleague a plan for managing larger/longer course interruptions.

There are various online course platforms where trainers can create, host, deliver and sell online courses. One of these is the ILIAS learning platform which allows both instructors and trainees access to course materials and lecture content online and to communicate with other trainees and trainers.

ILIAS platform for learning

ILIAS is the central platform for learning modules, online courses and tests. The abbreviation **ILIAS** stands for **Integrated L**earning, **I**nformation and Work Cooperation **S**ystem. ILIAS offers experts/teachers/ trainers/assessors and trainees a wide range of tools for the implementation of digitally supported teaching. ILIAS offers a variety of different digital tools. In ILIAS digital tools are called container objects. The figure below can be used by trainers to familiarise trainees with all container objects that the ILIAS system (e.g. version 5.4) has to offer:

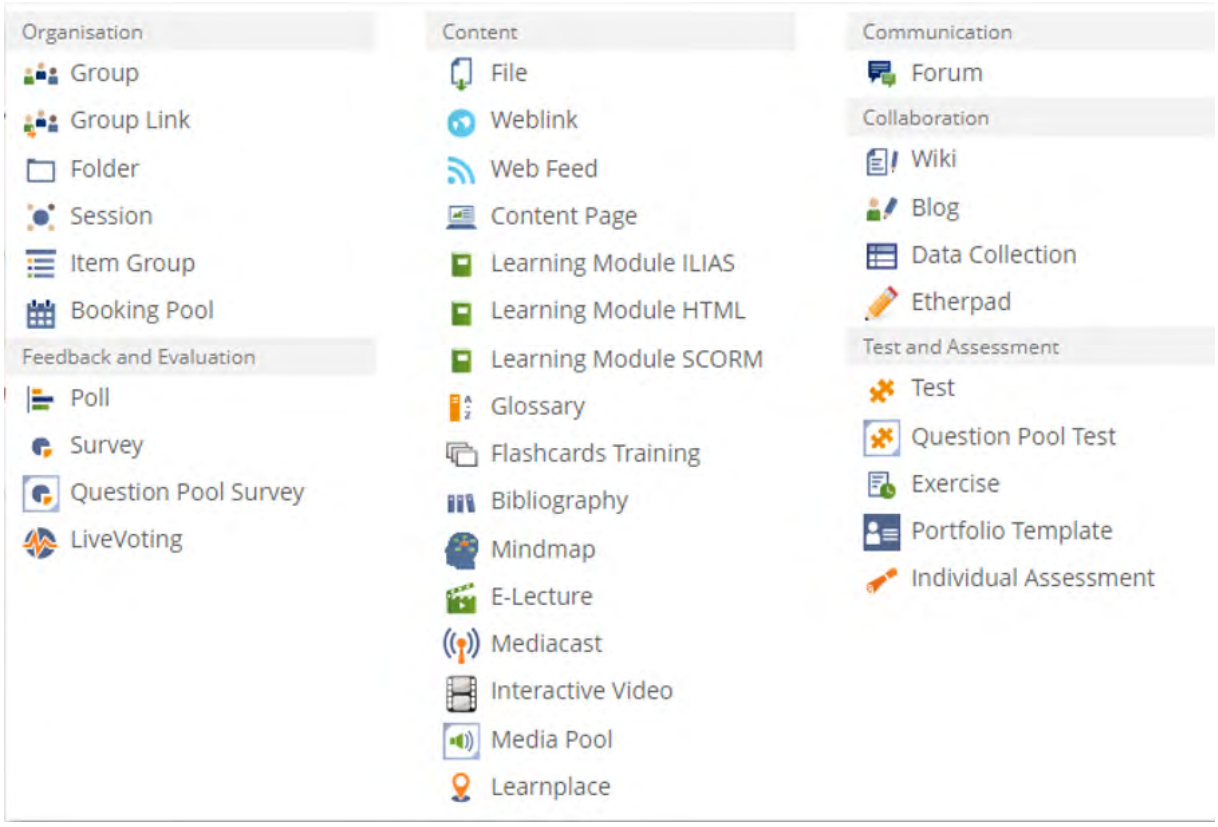

Figure 2 Container objects within the ILIAS system (version 5.4)
Source: https://www.uni-giessen.de/faculties/research-centers/ggs/teaching/e-learning-map/basics/ilias

With the ILIAS platform, trainers can easily create **learning modules content** and upload it on the platform. Learning modules are also called web-based training or digital learning modules. Here the trainer can:

- *Create learning modules;*
- *Copy existing ILIAS learning modules (Linked page to be translated);*
- *Create structure (chapters, pages, free pages, headers/footers, pages inactive, page break);*
- *Link content (e.g. glossary terms, internal/external links);*
- *Make up questions;*
- *Display information/course/module;*
- *Access control (public area, time control, preconditions, questions, in-depth knowledge, introductory page);*
- *Comment/evaluate (comment, change comments, evaluate).*

Some functionalities of ILIAS platform are presented and explained below to help trainees understand how to use this innovative tool.

- A popular use case is to convert PowerPoint presentations to HTML or HTML/Flash and upload them in ILIAS as **HTML learning modules**: In this way PowerPoint is no longer needed by the user as production software. A key differentiating criterion is, for example, whether animations are preserved. If the trainer uses learning materials in an application scenario that have already been used on other learning platforms or that have been pre-fabricated externally for other reasons, they are often available as HTML-based learning modules in compressed format (e.g. *.zip). ILIAS supports the import of all SCORM formats and even offers an editor for the latest standard SCORM 2004. This editor, which is almost identical in function to the ILIAS editor, produces learning materials which can then also be used in other compatible learning platforms;
- **Glossaries** can be created and edited. Terms and their definitions can be provided in glossaries and linked to ILIAS learning modules;
- The **folder**, which is a container object, allows trainers to structure contents in ILIAS. A folder can be created in other container objects but also in superordinate folders. In the folder itself trainers can create many other objects and use their functions;
- **Sessions** help trainers manage attendance events. This functionality can be used both for pure physical attendance courses and for blended learning courses that contain both online and physical attendance elements and in which the content is structured by sessions. Sessions always have a date and are automatically sorted according to it. When a course is called up ILIAS always shows only the next or currently running session in an expanded form. Sessions are both structuring objects of a course as well as calendar dates, i.e. as soon as the trainer creates a session, a date is set in the course calendar;
- ILIAS provides a **forum** where users can exchange information and discuss topics with each other independent of time and place. The contributions in a forum are primarily sorted by topic. ILIAS users can open new topics or reply to existing contributions;
- With **Groups** learners can share files, use forums, wikis, glossaries, tests or surveys or even create their own. There are public groups and closed groups;
- Trainees can download **files** up to 500.00 MB into their workroom or the ILIAS course. Trainees can be provided with different file types;
- **Weblink** allows the collection of references ("links") to internet addresses in a list and to comment on them;
- The **Interactive Video** element enables collaborative work by adding questions and comments at the desired position in a video. The three possible question types to be used are:
  - *Multiple choice questions;*
  - *Single Choice questions; and*
  - *Questions for reflection* (no answer is expected here, just food for thought);
- Trainers can use **tests** in ILIAS to check the learning and training success. Tests are independent objects and can be created outside and inside learning units. Using the drop-down menu in the upper right corner trainers can add a new test. On the following page they can then choose whether they want to create a new test, import a test or copy a test already existing on the installation;
- A **question pool** serves as a container for questions and must be created before a test is created. Trainers can use questions from different question pools in a test. When they import a test, they must assign the questions contained in it to one of their question pools. If they want them to be available separately, they must create a corresponding question pool before importing;
- While in tests trainers use questions with predefined answers, scores, etc. which ILIAS can also evaluate automatically, the **exercise object** offers trainers the possibility to have ILIAS users work on more holistic tasks which cannot or should not be evaluated automatically (e.g. writing an essay, making a sketch, etc.);
- A **portfolio** is a kind of digital collection folder (e-portfolio). The portfolio can play a special role in a course: for example, members of an internship group could report on their on-site experiences in the portfolio or blog and still identify common questions and problems and discuss them online in the protected framework of the group.

3.4 Subject area

Trainers should note that the outlines below are for guidance as regards sequence and length of time allocated to each objective. These factors may be adapted by trainers to suit individual groups of trainees depending on their experience, ability, and the equipment and staff available for training.
The following detailed outline indicates the performance expected of the trainees and is presented as a series of learning outcomes. These learning outcomes describe what a trainee instructor must be able to do, in order to demonstrate specific skills or knowledge.

All outcomes should be understood to be prefixed by the words "**The expected learning outcome is that the trainee is able to**..."

Subject: Instruction of competency-based training courses
Competence: Teach a competency-based course effectively using appropriate methods and teaching aids

Subject area	Hours	
	Lecture	Activity
1. Overview of the Tables of Competences and requirements for competency-based training and assessment 1.1 Understand the competence standards required by Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence 1.2 Development of consolidated tables of professional competencies 1.3 Requirements for competency-based education, training and assessment		
2. Planning an effective learning environment 2.1 Identify the factors which influence the teaching and learning process 2.2 Understand competence-based learning 2.3 Understand e-learning 2.4 Familiarisation with the e-learning platform 2.5 The learning and training process		
3. Teaching and training aids and methods 3.1 Use efficient and innovative teaching and training methods and aids 3.2 Select the appropriate teaching and training methods 3.3 Select the appropriate teaching and training aids		
4. Evaluating teaching, learning and training 4.1 Understand the purpose of evaluation 4.2 Establish an objective assessment 4.3 Types of evaluation/assessment 4.4 Use assessment results		
5. Designing and planning a training programme 5.1 Recognise factors to be considered when designing a training programme 5.2 Orient teaching activities to context and trainee needs 5.3 Design and develop a blended training programme 5.4 Conduct a practical Training session		

4. TRAINER MANUAL

4.1 introduction

Since this TTT is designed to train inland navigation trainers, it is important that it is a model of good practice. This Instructor Manual reflects the opinions of the course designers on contemporary teaching, learning and training approaches and methodologies; the topics and sub-topics chosen are those which the designers consider to be the most important. However, although the following Guidance Notes should be useful, those responsible for actually conducting the TTT course should develop their own ideas, refining and expanding the course according to practical experience and feedback.

As with any course, good preparation and planning are essential if this particular TTT course is to be well presented and successfully conducted.

The following guidance notes include subject matter details, recommended presentation and assessment techniques specific for each topic and sub-topic.

4.2 Guidance notes

4.2.1 Overview of the tables of competences and requirements for competency-based training and assessment

4.2.1.1 Understand the competence standards required by Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence adopted by Delegated Directive (EU) 2020/12

The purpose of this topic is to familiarise trainees with the basic knowledge of Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence adopted by Delegated Directive (EU) 2020/12, including their history and development process, structure and key contents in order to raise their understanding that the above-mentioned documents are two of the most important and influential conventions governing the training, qualification and certification for crew members employed to crew inland navigation vessels, and have a direct impact on the crew members themselves, the instructors and the Administration. The structure and contents of Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence (Delegated Directive (EU) 2020/12) should be briefly covered in particular, explaining that the overall aim is the creation of a "level playing field" by establishing common standards with regard to the professional competencies of inland navigation crew members, quality criteria of trainers or the attributes of learning and training tools such as simulators, training ships, e-learning platforms or practical learning and training equipment.

Furthermore, reaching a harmonised system of education, training and certification for the IWT sector through the implementation of the new standards is desirable as it provides for qualified personnel and aligns standards of control by competent authorities through the implementation and maintenance of the EU IWT member states.

Trainers are recommended to present the theoretical lecture of this topic by providing trainees with Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence (Delegated Directive (EU) 2020/12), explaining to trainees that the harmonised standards for competence are intended to ensure that all inland navigation crew members in Europe are properly educated and trained, adequately experienced, skilled and competent to perform their duties in a manner that provides for the safety of life and cargo and protection of the waterways. It is also recommended to make the distinction between Operational level and Management level.
The effectiveness of lecture delivery is likely to be enhanced if the classroom is equipped with practical teaching aids such as a computer, projector, e-learning platform and presentation application software.
It is suggested that a written or oral examination may be the preferable way to assess the trainees' performance to this end.

4.2.1.2 Development of consolidated standards of professional competencies

The purpose of this topic is to ensure that trainees have solid knowledge of the concepts of the competences of the seven learning modules for both Operational level (boatman, able boatman and helmsman) and Management level (boatmaster).

1. Navigation;
2. Cargo handling, stowage and passenger transport;
3. Controlling the operation of the ship and care for persons on board;
4. Marine engineering and electrical, electronic and control engineering;
5. Maintenance and repair;
6. Communication;
7. Safety, health and environmental protection.

In addition, trainers are recommended to explain to trainees the following issues included in Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and in Delegated Directive (EU) 2020/12:

(a) General Provisions;
(b) Qualifications of instructors and supervisors;
(c) Standards governing the use of training equipment such as simulators, training vessels, laboratories;
(d) Mandatory requirements for functions on board - operational level;
(e) Mandatory requirements for functions on board - management level;
(f) Supplements: i.e. mandatory requirements for ML on ships transporting dangerous goods or passenger vessels;
(g) Certificates;
(h) Training and assessment criteria;
(i) Quality system;
(j) Criteria for recognition of IWT institutes.

In order to achieve a consensus-oriented common understanding on the ES-QIN approach, trainers are advised to explain to trainees:

- The methodology for developing professional competencies, referring to the activities of the Joint Working Group (JWG);
- The development of consolidated standards for competencies;
- The distinction between knowledge and skills, as well as methods for demonstrating competence, such as: in service experience (work on board IWT vessels), training ship experience, simulator training, laboratory equipment training, engine rooms, electronic and paper charts, e-learning and computer software, VHF and other communication equipment, fire fighting equipment, or personal safety equipment;
- Criteria to evaluate competence.

Trainers are recommended to substantially acquaint themselves with the latest amendments to Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence adopted by Delegated Directive (EU) 2020/12 in the topic delivery.

Presentations should at least include the various tables of standards of competence found in the latest ES-QIN - Standards of competence. It is ideal that trainees are guided on how the standards are related to the competence tables. Case studies may be workable in terms of in-service training, simulator training and on-board training.

It is suggested that a written or oral group examination may be the preferable way to assess the trainees' performance to this end.

4.2.1.3 Requirements for competency-based education, training and assessment

The purpose of this topic is to ensure that trainees have a solid understanding of the concepts underlying a competency-based approach to IWT crew members' education and training.

Trainers should first make a distinction between Operational and Management level, and include the following points with regard to column 2 of the competencies:

*"Any candidate who wishes to obtain a qualification certificate for the **operational level** must have a good command of the competencies listed in chapters 1-7 (column 1) as well as the knowledge and skills (column 2). The education and experiences required for the obtaining of such competencies are based on the tables as well as on national requirements – if existent. The theoretical knowledge and practical skills are required equally for all types of vessels and all EU waterways. Additional requirements may nevertheless be formulated under certain conditions."*

*"Any candidate who wishes to obtain a qualification certificate for the **management level** must have a good command of the compulsory competencies for the operational level as well as the knowledge and skills as laid down in the standards for competence at the Management level. In this way, the theoretical knowledge and practical skills from the operational level are covered and deepened for management level. The theoretical knowledge and practical skills are required equally for all types of vessels and all EU waterways."*

To gain better insight into the differences between the Operational Level and the Management Level, the trainer is advised to present the trainees with the essential competences at the OL and ML, as presented in Delegated Directive (EU) 2020/12, as compared in Table 1 (see Annex 3).

4.2.2 Planning an effective learning environment

The objective of this part is to enable the trainees to build up a learning environment that can deliver teaching and training effectively. A learning environment is a classroom or any training facility designed to help all trainees to feel safe, respected, and valued in order to acquire new abilities and competencies. Impediments such as anxiety, discomfort, lesser involvement and lack of confidence to be successful are supposed to be reduced to a minimum. A learning environment is usually considered to consist of good classroom management and discipline, appropriate open communication, shared objectives, and a feeling of connectedness and trust. Competence to organise a learning environment is a necessary part for trainers to successfully carry out their teaching task.

4.2.2.1 Identify the factors which influence the teaching, learning and training process

This part provides trainees with knowledge concerning the factors that influence teaching, learning and training. Such factors allow trainers to optimise their planning, delivery and assessment methods for enhanced teaching, learning and training and to motivate trainees appropriately. Motivation is used to describe those processes that can arouse and initiate effective trainees' behaviour that gives appropriate direction and purpose. Motivation is possibly the most important factor in learning and training. What motivates one person may not motivate another. For some trainees it is the interest or the challenge that provides the motivation. For other trainees, it is the reward such as Union certification or increased earnings, the need for the recognition or status, or fear of the consequences of failure. Strong motivation is an important factor in learning and training, but if the trainee becomes too anxious and tense effective learning is unlikely to take place. Trainee motivation will be affected by the selection of teaching content, the teaching and training strategies, tasks that the trainer asks the trainees to complete, the way the trainer provides feedback, the means of assessment and other issues. Trainees with high learning motivation are more likely to persist at a task than trainees with low learning motivation. Those who are confident and motivated to learn, spend more time and effort and achieve higher levels of performance than trainees who are not confident and motivated.

The trainer is advised:

1. To consider the six learning motivation variables: *reinforcement, course relevance* (the value of course content related to trainees' jobs and studies), *interest, self-competence* (trainee's feelings of self-worth and self-efficacy, the degree to which the trainee believes that he/she is able to achieve a given task), *affect* (trainee's feeling and emotion during the learning and training experience) and *learner control*;
2. To list major factors influencing learning and training: *intellectual, learning, physical, mental, emotional* and *social factors, teacher's personality* and *environmental factors*;
3. To discuss psychological factors influencing learning and training, such as: *motivation, perception, learning, attitudes and beliefs, family, reference groups, roles and status* and *culture*;
4. To explain various socio-cultural factors influencing learning and training;
5. To describe various methods of teaching and learning that affect learning and training; and
6. To explain the influence of online learning and training.

4.2.2.2. Understand competency-based learning

This topic provides trainees with the appropriate knowledge referring to *competence, competence-based education* and *competence-based learning*, as well as the difference between *competence* and *competency.*

Trainers are advised to explain the above-mentioned concepts to trainees, for example **Competence** is *a cluster of related abilities, commitments, knowledge and skills that enable a person (or an organisation) to act effectively in a job or situation*. Competence indicates sufficiency of knowledge and skills that enable someone to act in a wide variety of situations. Because each level of responsibility has its own requirements, competence can occur in any period of a person's life or at any stage of his or her career.

According to DIRECTIVE (EU) 2017/2397 '**Competence**' *means the proven ability to use the knowledge and skills required by the established standards for the proper performance of the tasks necessary for the operation of inland waterway craft,* whereas **Competency** means *an important skill or ability that is needed to do a job.*

Competency-based education, which focuses on the *mastery of learning outcomes* rather than on academic achievement through fixed time structures, is an approach that has the potential to offer trainees an efficient, less costly path to an IWT certificate, employability, and enhanced professional skills. The concept behind competency-based education is simple: learning is best measured by trainees demonstrating mastery of learning and training, rather than the number of hours spent in a classroom, simulator, laboratory or workshop.

Competency-based learning refers to systems of instruction, assessment, grading, and academic reporting that are based on trainees demonstrating that they have learned the knowledge and skills they are expected to learn as they progress through their education.

The main goal of competency-based learning is to ensure that trainees are *acquiring the knowledge and skills that are deemed to be essential to success in IWT education, careers, and adult life*.

4.2.2.3. Understand e-learning

This topic provides trainees with the appropriate knowledge referring to e-learning - teaching based in or out of the classrooms, the use of computers and the Internet.

Trainers are recommended to explain to trainees that e-learning is the process of providing learning and training to trainees through various electronic media such as the Internet, audio, video, etc.; of sharing knowledge through various channels such as e-books, CDs, webinars, LMS platforms and more; that the word e-learning can be used synonymously with web-based training or online tutoring. Trainers can use the term e-learning in various forms but the concept remains the same.

Future trainers should be made aware of the importance of e-learning

- E-learning has been introduced to empower learners to get basic schooling and enhance skills, to obtain a degree certificate, without actually attending school or university or any other institution;
- Applying e-learning helps trainees grasp the courses adequately at a faster pace;
- According to psychology, the audio-visual method of teaching and training leads to a disciplined learning environment. There is an effective trainer and trainee engagement;
- One important point of e-learning in education and training is that trainers and participants both can develop advanced learning skills. E-learning has worked towards bringing learners, trainers, experts, instructors, and other interest groups to one place. Thus, there is a good practice of knowledge sharing followed through different online platforms. This is important in current times as competition is rising and the world is also growing. Hence, quick information helps in the better growth of an individual.

Trainers are encouraged to explain to trainees that **e-learning** is a blend of the following methodologies and practices:

- Completed online – no face-to-face meetings;
- Provided through Mixed Learning – A blend of online and direct communication. This can be achieved in two different forms:
  - *Synchronous* - the communication between the trainer and the trainee happens directly as in chat rooms, or video-audio conferencing;
  - *Asynchronous* - The information is passed through forums, emails, wikis, etc.
- Promoted through the self-study practices also;
- Web-based learning is another better option;
- CD-ROMs provide subject wise detailed learning;
- Audio and Visuals are more supplementary, descriptive and communicative methods.

Trainers should explain to trainees the advantages of e-learning which they must not miss:

- **Online Learning can accommodate everyone's needs;**
- **Classes can be taken from any place and at the time** which students or tutors prefer;
- It **offers access to exclusive, prolific and updated content** and accessibility is open, secure, and uninterrupted;
- It **ensures quick delivery of lessons**. Traditional classrooms involve some kind of delay;
- The scalability of learning, content, and duration that is taken can be reasonably measured. It is beneficial to those who feel nervous and disconnected in groups. It helps one learn without having to give up the comforts of the environment. Trainers are at ease with Consistency of exposure, inputs, results, and coordination is highly ranked in E-learning as it allows trainers a higher degree of coverage to deliver the content regularly. This ensures consistency in learning;
- The method is made available at **much-reduced costs**. The importance of e-learning education is that it is quick and does not require much cost. The long training period, infrastructure, stationery, travel expenses, etc. are reduced;
- **Effectiveness of the transferred or imparted knowledge and learning is high and powerful**. It makes information easy to grasp and absorb. The audio-visuals help in remembering knowledge for a longer time. Also, the courses which trainers prepare are well-planned;
- **Mobility assured is a very comfortable and affordable option**. Taking revision and getting hands-on different courses is not that simple in traditional classes. In contrast, missed lessons can always be taken again online. This makes it easier for trainers to impart the right information;
- It promotes a **self-paced learning and training process**.

Unlike the traditional method of teaching, e-learning is fulfilled with the online mode of learning and training as trainees can learn at their comfort and requirements.

Trainers should explain the advantages of e-learning to trainees:

- They can access the study material an unlimited number of times;
- They can study courses anytime and anywhere;
- Trainees can access updated content when they want;
- Unlike the traditional method of teaching, e-learning has a quick mode of delivery. This indicates that learning time is reduced;
- E-learning provides scalability which helps in providing training;
- All trainees can receive the same type of syllabus, study materials and train through e-learning;
- Through e-learning, both trainers and trainees can save time, money and reduced transportation cost, so e-learning is cost-effective compared to traditional learning;
- E-learning is provided online so there is no need for papers, as with traditional learning. This is beneficial for the environment;
- Trainers can link the various resources in several varying formats;
- Web-based learning and training promotes active and independent learning and training;
- One big advantage of e-learning is that one can educate oneself in the comfort of one's own home and get a degree;
- E-learning is based on convenience and flexibility. All the resources for trainees as well as trainers are available in one place;
- Anyone can get training on a day-to-day basis. It can be on weekends or whenever one has free time;
- E-learning is also beneficial for practical training. This is because crew members should also be educated about new skills and competencies. It helps in improving their efficiency and is fruitful for their future job;
- There is an easy way for clearing doubts through discussion boards or chat boxes. Trainers can easily answer the queries of trainees. It thus leads to better interaction;
- Global level education - Trainers can provide online education in multiple languages to people in different time zones;
- Last but not the least trainers may evaluate each trainee online which is quicker and less tiring.

The disadvantages of e-learning must also be explained:

- Online trainee feedback is limited;
- E-learning can cause social isolation;
- E-learning requires strong self-motivation and time management skills;
- Lack of communicational skill development in online trainees;
- Cheating prevention during online assessments is complicated;
- Online instructors tend to focus on theory rather than practice;
- E-learning lacks face-to-face communication;
- E-learning is limited to certain disciplines;
- Online learning is inaccessible to the computer illiterate population;
- Lack of accreditation & quality assurance in online education.

4.2.2.4. Familiarisation with the e-learning platform

The purpose of a successful e-learning platform is that it creates a robust learning experience that feels like a classroom experience, offering the traditional classroom characteristics (like instructor-trainee interaction, Q&As, discussion, games, simulations, collaborative projects, quizzes, etc.) but either online or through a device (e.g. a laptop, desktop, tablet or mobile.) These important learning environments are achieved through a learning platform's features and tools that create the level of interaction and engagement trainees need.

As there are many learning styles for different types of trainees, the learning platform should be able to host:

- Different content formats to address trainees' specific learning styles, such as: articles, interviews, webinars, charts, PowerPoint presentations, simulations and video;
- Content modules, learning modules, evaluation modules and communication modules. These modules allow for the training programme to incorporate a variety of teaching styles for every trainee and allows for trainees to boost their performance level and knowledge-retention levels.

ILIAS offers three main working areas: **Personal Desktop, Repository** and **Administration** - depending on the role that is assigned to the user, he/she has access to different functionalities.

Personal Desktop

When a trainer or a trainee makes a registration in the system, they will see the view of the menu "**Personal Desktop**" and in particular – the view of the page "**Overview**". There both trainers and trainees can find the following elements: *System messages, News, Selected items, Calendar, Mail, Notes, Active users, Bookmarks, My tags*. The Overview can be customised – the elements can be hidden, shown in different details or randomly sorted.

From the drop-down menu "Personal Desktop" trainers/instructors have access to other functionalities, such as:

- Information about your courses and groups;
- Options for personal resources creation, such as blog, folders, files and certificates;
- Section for portfolio creation;
- Selection of personal competences and tracking of the personal learning progress;
- Opportunity to create lists with personal contacts;
- Options for personal information and profile administration;
- Options for settings administration – *General Settings, Password, Mail Settings*.

Repository

In the Repository instructors can create and store all objects and learning resources (*categories, courses, groups, training modules, tests, exercises, surveys, polls, forums, chats, news channels* and many others). All of them are categorised by type and content.
The information can be presented in several different views - according to the user's preferences, and the available search functionality significantly simplifies the process of finding the desired learning material.
In ILIAS instructors can find several options for learning progress management:

- Setting time for the completion of some learning materials, usually tied to solving a test;
- Defining the learning objectives and sorting the learning materials accordingly;
- Course learning progress tracking and statistic overview.

Administration

This area gives access to the administrative settings of all features and objects in the system. The users, who have rights to that part can define:

- The general settings and those for layout and style;
- Languages;
- Accessibility;
- User accounts;
- User roles;
- Settings for all services and objects, offered by ILIAS.

System Settings

As already mentioned, ILIAS is an open-source learning management system, making it very easy to install, configure and adapt to the trainees' specific needs and wishes.

The ILIAS server can work with the following OS: Unix, Linux, Mac OS X and Windows. The required additional software, such as MySQL, PHP and Apache, can be downloaded for free from the ILIAS official website.

ILIAS multifunctionality can be used for:

- Realisation of blended and distance learning and training;
- Support of the activities of traditional training forms;
- Conducting of online courses, exams, tests, exercises and assessments;
- Results tracking;
- Tracking the trainees' competences;
- Creation, organisation and management of learning content, suitable for re-use;
- Creation, organisation and management of interactive and customised learning content;
- Increasing the productivity during the creation of learning content;
- Collaboration between different teams and projects;
- Collaboration between trainees;
- Creation of a digital library by different educational institutions and organisations; etc.

The digital Teaching Box on ILIAS platform includes:

- How to Design Digital Teaching Scenarios;
- How to Implement Hybrid Teaching Scenarios;
- Examination Scenarios;
- How to Use Web Conference Systems;
- How to Use Video and Authoring Tools;
- How to Work with the ILIAS Learning Platform;
- How to Learn Digital Teaching;
- How to Benefit from Best Practices.

Although face-to-face courses can never be transferred one-to-one to a digital format, digital tools offer many adequate and learning-enhancing solutions, provided that they are used and designed in a didactically meaningful way. Trainers can use digital elements to enrich their face-to-face course, transform it into a blended learning format with a sensible mix of classroom and online phases, or conduct it in a fully virtualised form.

Below there are two info graphics to support trainers in their course planning. They illustrate the various steps that they should take into account when implementing digital teaching scenarios.

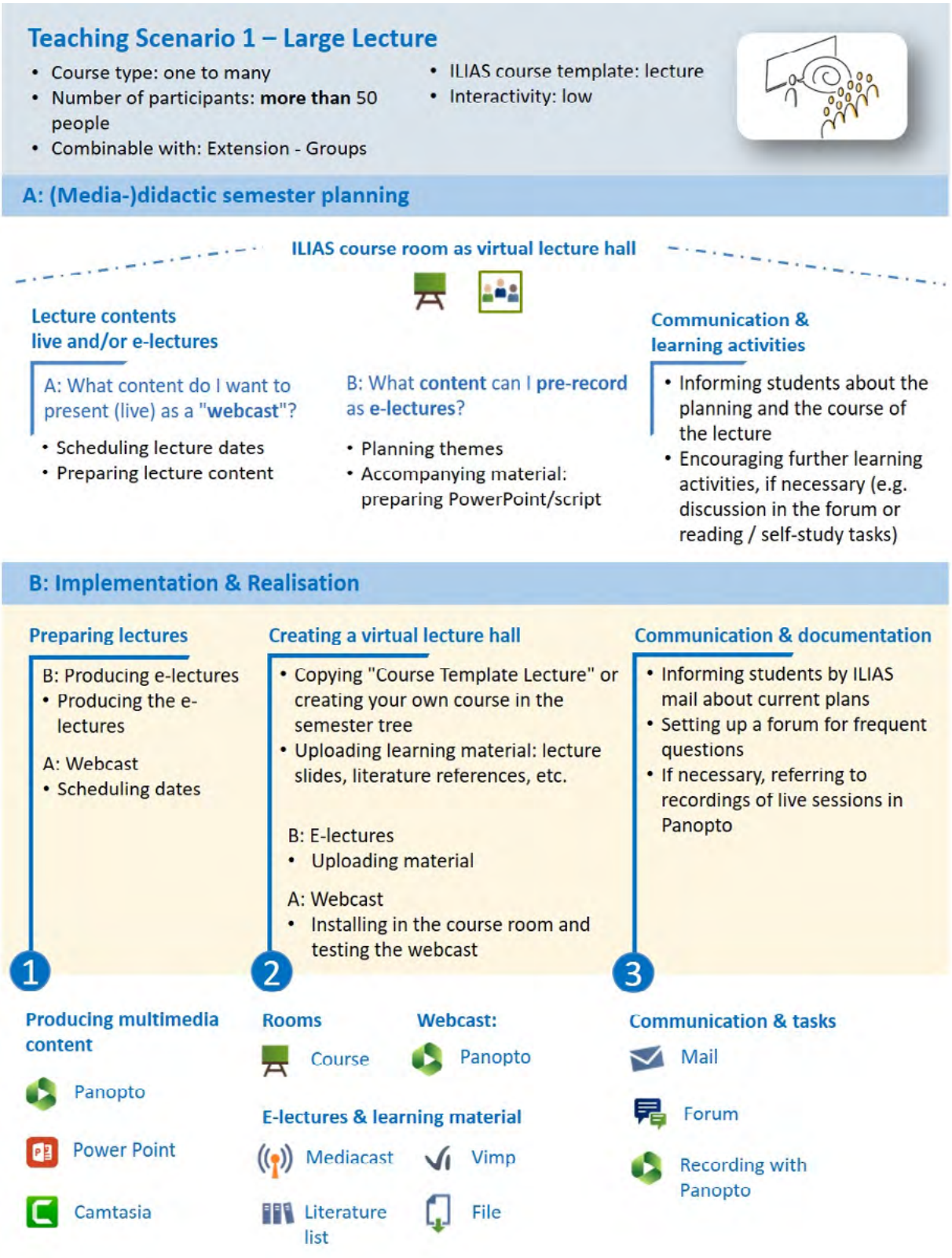

Figure 3. Info graphic "Large digital lecture"
Source: https://ilias.uni-freiburg.de/goto.php?target=wiki_wpage_19654

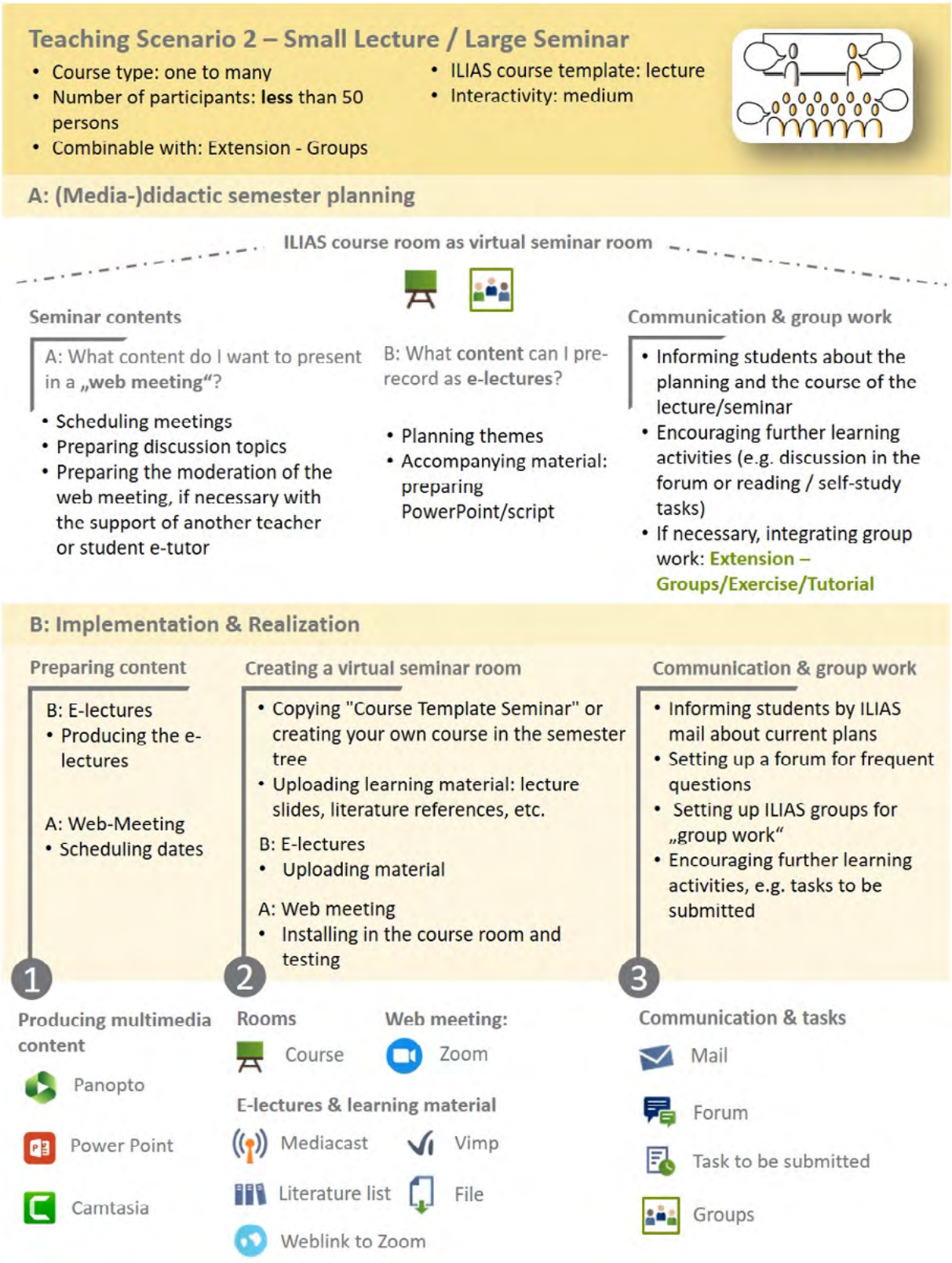

Figure 4. Info graphic "Small digital lecture"
Source: https://ilias.uni-freiburg.de/goto.php?target=wiki_wpage_19654

4.2.2.5 The learning and training process

4.2.2.5.1 ADDIE model

The purpose of this topic is to ensure trainees that teaching and training cycle is an ongoing learning process for the continuous improvement of a training programme, whether virtually or in a traditional classroom, whether developed from scratch or taught by an external trainer to the education & training organisation. Trainees should understand that the training cycle begins before the training program is conducted and continues after the program is completed. The emphasis is not simply on a training event itself but also on the planning, development and review stages.

Trainers are advised to explain to trainees the ADDIE Instructional Design (ID) method which is a framework in designing and developing educational and training programs for a long time. The ADDIE model refers to **Analysis, Design, Development, Implementation** and **Evaluation**. It is simple to use, flexible, and versatile. It is cyclical; that is, it enables the instructor to correct the errors made in previous iterations, thus improving the quality of the end product.

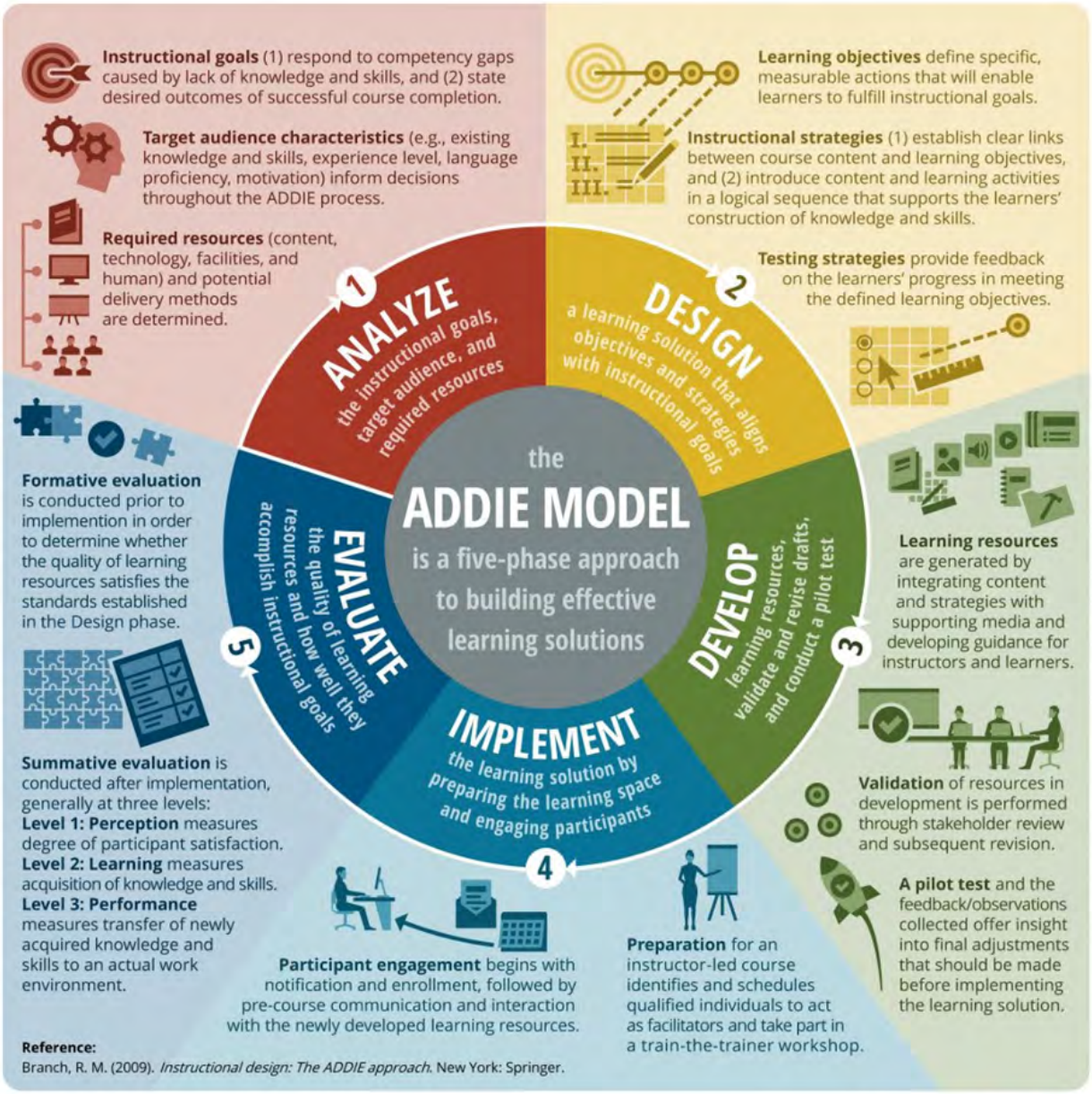

Figure 5. ADDIE model
Source: https://elearninginfographics.com/the-addie-model-infographic/

The trainer is advised to explain the 5 components of the ADDIE model to trainees as follows:

Analysis

Trainees should be made aware that the better instructors study the requirements prior to the course creation, the more effective the resulting course will be. Analysis helps the instructor gain a clear understanding of the following:

- **Who is the primary target audience for the course?**
  - *Who will the trainees be?*
  - *Are participants in the course domain experts looking to broaden their knowledge, or newcomers just taking their first steps?*
  - *What are the common traits shared by the target audience?* (e.g. knowledge from an adjacent domain, or the overall inland navigation level).

- **What are the learning objectives of the course?** Before starting to work on teaching materials, it is vital to determine the main learning objectives and clearly communicate them to everyone involved in the creation of the course.
  - *What are the learning objectives of the course?* Before starting to work on teaching materials, it is vital to determine the main learning objectives and clearly communicate them to everyone involved in the creation of the course.
  - *What does the course aim to teach?*
  - *What knowledge and skills will it impart to the trainees who complete it?* The objectives must be described in detail from the outset, and they must be measurable.

- **What are the physical and organisational constraints?** It is important to understand in what environment the course will be delivered. The following questions should be asked:
  - Are there any limitations imposed by the rules of the organisation the instructor designs the course for that need to be taken into account?
  - Is the overall length of the course or the time allotted to the study of individual modules limited in any way?
  - In what setting will the education take place? (classroom/auditorium, e-learning platform, on board vessel, etc.?
  - Does the setting meet all the requirements of the course, or can those requirements be met when the need arises?
  - Will the setting impact the effectiveness of education and training?

- **What are the technical requirements of the course?** During the analysis phase it is necessary to formulate any technical requirements and limitations of the course, especially if it is planned to use the course for online learning. Trainers should make sure that they know the following details before starting to work on the course and take them into account:
  - The bandwidth of the trainees' internet connections.
  - Whether the trainees are equipped with the devices necessary for audio playback (sound cards, speakers, headphones, and/or microphones).
  - The list of software pre-installed on the trainees' computers.
  - The list of browser plugins necessary for participating in the course (Java Virtual Machine, Flash, etc.).
  - What browser(s) the trainees will be using to access the course.

- **What are the structural characteristics of the course?** All the information gathered during the preceding steps of analysis will help the trainee establish the structure of the course. Trainers need to answer the following questions before they begin:
  - Is there any need to split the course into individual modules and include step-by-step instructions?
  - At what key points do instructors need to test the acquisition and retention of knowledge?
  - What weight is to be assigned to each test?
  - Will the modules differ in size and importance?
  - How will the trainees use the course material in the future?

- **How accessible are the knowledge sources?** During the analysis phase it is important to assess the accessibility of materials trainers will use during the creation of the course. The following questions should be answered:
  - Who or what will serve as the main source of information?
  - Are the necessary information sources available in-house, on the e-learning platform or will they have to be found elsewhere?
  - Is information about the course's topic available on the Internet? Is it easily accessible?
  - Are there any materials on the topic that have already been written/created? Perhaps a different course that was used in the organisation before?
  - Are there subject matter experts within the organisation that can help the trainers work on the course by sharing their knowledge and expertise? Will they be available to assist trainers with preparing the course?

- **What criteria will be used for assessment?** Trainers need to determine the way to assess the knowledge acquired by the learners. Having answers to the following questions will be helpful:
  - How exactly will trainees be graded after the completion of the course? What kind of tests will be graded, or will the effectiveness of the course be measured by the practical skills and competences the trainee acquires after completing the course?
  - If the trainer plans to assign grades to trainees, what will be the passing grade, and will a learner be able to pass a failed test again to improve their result?

Design

Trainees will be taught that in the design phase, the focus is on learning objectives, content, subject matter analysis, exercise, lesson planning, assessment instruments used and media selection. The goal of this stage is to create the structure of the course and/or design a simulator exercise.

Trainees should understand that this approach in this phase should be systematic with a logical, orderly process of identification, development and evaluation of planned strategies. It should follow a very specific set of rules, and each element of the instructional design plan must be executed with attention to detail.

For the e-learning process, the following should be considered during the design phase:

- How much time will trainees be able to dedicate to the online course?
- What tools are available for course development?
- Does the design of the course engage trainees with strong visual and audio elements?

During the design stage, the trainer needs to accomplish three main goals:

- **Decide on the format of the course**. The course developer has to decide how to best impart the knowledge to the target audience. They have to decide upon what teaching methods and aids to be used in order to prepare a course manual, trainees will be able to study at their own pace, whether to create an electronic course on a computer, or resort to blended learning, what type and the number of tests to be used, what references to be included, etc.
- **Develop the education strategy.** The education strategy is comprised of lectures, storyboards, discussions, tasks, tests, projects, and supplementary materials meant to help the trainees better understand the course material. All of these are important to be developed as:
  - Trainees will know **what topics will be covered** in a particular section of the course and the instructors can motivate them by explaining the advantages of possessing the knowledge and skills that will be shared to them during the education and training process. At this stage it is beneficial to tell the trainees about the objectives of the course, as these will help them understand the global structure of the course, and also how they would be able to apply the obtained knowledge after completing the course;
  - The **course will be concise** and unnecessary details can be avoided. Examples should be included to help trainees understand the material better. For example, using a storyboard which includes a script, graphics (or a description of graphics) or other multimedia elements, such as voice over the script, will make it much easier for the trainee to understand what is being taught;
  - It is vital to **enable the trainees to practise** what they are being taught. The amount of practice a trainee gets while taking the course and after completing it directly corresponds to how quickly and well he/she obtains the requisite skills.
- **Evaluating results.** The trainer needs to define the results the trainees have to achieve for the course to be considered a success. Depending on the specific objectives of the course, it is important to decide on the correct way to determine whether the trainees have reached the required performance. It is important to choose a way of rating the trainees that clearly shows whether they have acquired the necessary knowledge and if the obtained skills and competences meet the requirements set for the course.

Development

In the Development stage the trainer starts the production and testing of the methodology being used in the course. In this stage, the trainer makes use of the data collected from the two previous stages and uses this information to create a programme that will relay what needs to be taught to participants.

Here are a few considerations the trainer should keep in mind during course development:

- **Spice the course up with media content.** Anything from illustrations to videos to graphs and tables will make the course look better and help the learners to acquire information on the visual level. Interactive tasks will make the course more engaging and give the trainees some hands-on practice related to the topics being learned;
- **Introduce new topics only after** the learners have had a chance to grasp the basics and understand all underlying concepts;

- Do not disregard the data collected during the Analysis stage; **always keep in mind the main objectives the course** aims to achieve.

Implementation

During the implementation stage, the materials created during development are introduced to the target audience and the learning process starts. The trainer reflects the continuous modification of the programme to make sure maximum efficiency and positive results are obtained. Here the trainer will redesign, update and edit the course in order to ensure that it can be delivered effectively.

The trainers developing a course should consistently analyse, redesign and enhance the course to ensure competency-based delivery. Meticulous monitoring is a must. Proper evaluation of the lesson, course or programme, with necessary and timely revisions, is done in this phase. When trainers and trainees actively contribute during the implementation process, instantaneous modifications can be made to the course or lesson, thus making the programme more effective and successful.

If trainers use an online course development tool or a Learning Management System (LMS), then the course is already where it needs to be. Trainers can hit publish, invite trainees via email, and track trainee progress and results. A good LMS streamlines much of the work necessary to deliver the content, and track trainee progress and results.

There may be instructor-led sessions before, after, or in-between self-directed sessions. And with an LMS, trainers don't need everyone in the same room for either type of session. Everyone can sign in from wherever they are and use built-in group chat or video to communicate during the training sessions.

Evaluation

The last stage of the ADDIE method is Evaluation. This is the stage in which the trainer must subject the course to meticulous final testing regarding the *what, how, why, when* of the things that were accomplished (or not accomplished). There is an initial evaluation which happens during the development stage and a summative evaluation which occurs at the end of the programme. The main goal of the evaluation stage is to determine if the course objectives have been met and to establish what will be required moving forward in order to further the efficiency and success rate of the programme.

Evaluation is done throughout the implementation phase with the aid of the trainer and the trainees. After the implementation of a course or programme is over, a summative evaluation is carried out for instructional improvement. Throughout the evaluation phase the designer should ascertain whether problems relevant to the training programme are solved and whether the desired objectives are met.

Evaluation is an essential step of the whole ADDIE method as it aims to answer the following questions:

- Was the course effective? (i.e. improved learning, increased motivation, competence/skill acquired, etc.).
- Was learning and instruction fun and engaging?
- Did the trainer understand the objectives of the course?
- Were the teaching materials relevant to the course's objectives?
- Were there enough practical exercises?
- Did the tests check the knowledge that is relevant to the course's goals?
- Did the trainer receive enough feedback from trainees?

ADDIE is a cyclical model that encourages designers to continuously evaluate and refine their work. The more trainers learn about what works well,—and what doesn't—the better their course will become.

4.2.2.5.2 The training process

Trainees should be aware that adult learners need to be ready to engage in the learning and training process. Barriers are created when trainees lack interest, don't see the benefit of learning and training, or have negative feelings about either the training or the content.

The goal is to give them positive feelings about the learning and training experience, and put them into an optimal state for learning. This can be achieved through:

- Positive suggestions;
- Trainee benefit statements;
- Clear, meaningful goals;
- Curiosity raising;
- Creating a positive physical environment;
- Creating a positive emotional environment;
- Creating a positive social environment;
- Calming trainees' fears;
- Removing learning barriers;
- Raising questions and posing problems;
- Arousing trainees' curiosity;
- Getting trainees fully involved from the start.

Unless adult trainees are integrally involved in creating and adapting their own learning content, they don't learn. They need to initially encounter the new knowledge and skills in ways that are meaningful to them, and incorporating their own learning style, whether visual, auditory, intellectual, or kinaesthetic.

The trainer should help the trainees encounter the new material in ways that are interesting, enjoyable, relevant, multisensory and that appeal to all learning styles. Here are some examples:

- Collaborative pre-tests and knowledge sharing;
- Interactive presentations;
- Variety to appeal to all learning styles;
- Partner- and team-based learning projects;
- Discovery exercises (personal, partnered, team-based);
- Real-world, contextual learning experiences;
- Problem-solving exercises.

Knowledge is not something a trainee absorbs. It is something a trainee creates, and it needs time for integration. Trainees need to be given time to integrate the new knowledge and skills into their internal structure of self, meaning, beliefs and skills. This can be achieved in a variety of ways:

- Hands-on trial/feedback/reflection/retrial;
- Real-world simulations;
- Learning games;
- Action learning exercises;
- Individual reflection and articulation;
- Partner- and team-based dialogue;
- Skill building practice activities;
- Onboard training.

Without immediate application to the real world, only 5% of the newly learned knowledge and skills is retained. With immediate application - and the proper coaching and support - trainees typically retain 90% of the new knowledge and skills.

When designing a training programme, developers put 80% or more money, effort, and time into creating presentation materials.

4.2.3 TEACHING AND TRAINING AIDS AND METHODS

4.2.3.1 Use efficient and innovative teaching and training methods and aids

This part is to ensure the trainees understand and correctly use competency-based teaching methods in training for the IWT sector. Effective teaching can be achieved largely by the activities that are in proportion to the levels and features of trainees. All too often, trainees complain that instructors do not take their characteristics into account and thus teach in the same way for every trainee, not differentiating their teaching to meet the needs of the trainees and the content. A competency-based teaching and training activity is the result of the trainees who possess the same competencies at the operational level (OL) and managerial level (ML) respectively, who respond quickly and adapt to the tasks.

Trainers should be able to deliver teaching & training sessions using a variety of styles. They should therefore have gained a real command of competency-based teaching methods, old or new, to satisfy the trainees' needs. This also adds flexibility to the trainees' toolbox, so that they can have more options at hand to deal with one or two subjects instead of just one unpopular method.

4.2.3.2 Select the appropriate teaching and training methods

A. Question and Answer

This method is quite important. Through questioning, an attempt is made to ascertain and evaluate the knowledge of trainees with regard to the subject. This method ensures participation. The instructor should ask questions and the trainee should be encouraged to ask questions.

Instructors ask questions for a number of reasons, the most common of which are:

- To interest, engage and challenge trainees;
- To check on prior knowledge and understanding;
- To stimulate recall, mobilising existing knowledge and experience in order to create new understanding and meaning;
- To focus trainees' thinking on key concepts and issues;
- To help learners to extend their thinking from the concrete and factual to the analytical and evaluative;
- To lead trainees through a planned sequence that progressively establishes key understandings;
- To promote reasoning, problem-solving, evaluation and the formulation of hypotheses;
- To promote trainees' thinking about the way they have learned.

Asking the right question is at the heart of effective communication and information exchange. By using the right questions in a particular situation, any person can improve a whole range of communications skills. For example, the trainee can gather better information and learn more; he/she can build stronger relationships, manage people more effectively and help others to learn too.

In the video "Questioning Techniques", instructors and trainees can explore some common questioning techniques, and when (and when not) to use them. https://youtu.be/ImfU12epYcI

The kind of question asked will depend on the reason for asking it. Questions are often referred to as 'open' or 'closed'.

A '**closed' question** usually receives a single word or very short, factual answer. For example, "Are you a boatman?" The answer is "Yes" or "No"; "What is your job?" The answer is the name of the job.

'Open' questions elicit longer answers. They usually begin with what, why, how. An open question asks the respondent for his or her knowledge, opinion or feelings. "Tell me" and "describe" can also be used in the same way as open questions. Here are some examples:

- What happened in the engine room?
- Why did the fitter react that way?
- Tell me what happened next.
- Describe the circumstances in more detail.

Open questions are good for:

- Developing an open conversation: *"What did you get up to on vacation?"*
- Finding out more detail: *"What else do we need to do to repair the main engine?"*
- Finding out the other person's opinion or issues: *"What do you think about those changes?"*

Closed questions are good for:

- Testing the trainee's understanding: *"So, if I get this qualification, I will get a raise?"*
- Concluding a discussion or making a decision: *"Now we know the facts, are we all agreed this is the right course of action?"*
- Frame setting: *"Are you happy with the service on board our vessel?"*

A misplaced closed question, on the other hand, can kill the conversation and lead to awkward silences, so are best avoided when a conversation is in full flow.

Another type is the **'funnel' question**. This technique involves starting with general questions, and then homing in on a point in each answer, and asking more and more detail at each level. It's often used by inspectors or surveyors taking a statement from a witness:

"How many people were involved in the fire?"
"About ten."
"Were they officers or ratings?"
"Mostly ratings."
"What sort of ages were they?"
"About forty or fifty."
"Were any of them not wearing the protective clothing?"
"Yes, several of them were not wearing safety helmets or gloves."
"Can you remember who sounded the fire alarm?"
"Yes, I remember seeing oiler Thomas shouting 'Fire in the engine room'."

When using funnel questioning, the instructors should start with closed questions. As he/she progresses through the funnel, he/she may start using more open questions.

Funnel questions are good for:

- Finding out more detail about a specific point: **"Tell me more about Option 2."**
- Gaining the interest or increasing the confidence of the person you're speaking with: **"Have you used the practice training book?", "Did they solve your problem?", "What was the attitude of the boatmaster?"**

Questions may be used to provide a framework for a lesson, but when used they must be carefully controlled. In such a situation, the trainer should know the answer to the question before it is asked. Probable wrong answers and strategies to deal with them should also be considered.

When using questions, the instructor must decide how to control the class. If all of the class tries to speak at once then nothing is achieved. The question may be put to the class as a whole or the question may be put to an individual. Some trainees may be more willing than others to answer questions. The trainer must try to get as many responses from as many trainees as possible; the questions should therefore be spread around the class. Questions should be clear and asked in a language that the trainees can understand. Simple questions should be asked before complicated ones. The answers should be treated tactfully. A correct answer should be praised. If an answer is partly correct, the correct elements should be praised before the incorrect elements are addressed. It is important to find the reason behind an incorrect answer. No one should be made to look or feel stupid as this may affect his or her willingness to participate. Sometimes asking a question in a different way, breaking the question into smaller sections or offering simple clues, may help.

When a trainee asks a question, the trainer will not always know the answer. In this situation, the trainer should respond by advising the trainee where to find the answer or by offering to find the information. Incorrect information should never be provided.

B. Lecture

Giving lectures is the oldest teaching method applied in educational institution. This teaching method is a one-way channel of communication of information. Trainees' involvement in this teaching method is just to listen and sometimes write down some notes if necessary during the lecture, combine the information and organise it. Learners always appreciate a concise, stimulating and well-delivered lecture.
To lecture effectively, the trainer needs to understand the objectives, prepare for the lecture, become very

familiar with the subject matter, identify and prepare supporting aids to illustrate the points. For example, the lecture can be used to introduce and explain the ES-QIN standards and other IWT instruments, transfer knowledge about emergencies and damage-control plans, or explain safety and security rules and regulations for persons on board, for safety, health and environment, etc.

The lecture method serves four basic purposes: *to motivate, to clarify, to review* and *to expand*.

Before starting to prepare a lecture, the trainer must be able to answer four basic questions:
- Who is your audience? – WHO?
- What is the purpose of your lecture? – WHY?
- How much time is available - HOW LONG?
- What is the subject matter? – WHAT?

The objectives of a lecture are to:
- Give general information on a subject;
- Gain acceptance for a new point of view;
- Change basic attitudes;
- Teach a particular skill.

A good lecturer must take care of: *time available, the audience, subject matter, posture, appearance, manner, gesture, voice, vocabulary, use of audio-visual aids & blackboard*.

One of the problems with this method is to grab the attention of trainees in the classroom. Another big problem is that a too-large group of trainees in the classroom cannot follow the theme.

During a typical lecture, a trainer stands in front of a class and presents information for the trainees to learn. Today's technology, however, gives trainers the ability to incorporate sound and visuals in a lecture. A trainer can write on a whiteboard or use a video projector. Texts can be shared via a document camera and graphics can be used in presentations. All of these methods will provide visuals for trainees.

It is important that the trainer be aware of his/her own body movements and facial expressions and that he/she speak clearly, loudly and use simple language.

The following tools are available for the fast digitalisation or **digital support of a lecture**:
- Trainers can copy didactic course templates for pure lectures, lectures with practice elements and seminars and use the "Course Templates" as a basic structure for their own ILIAS courses. Trainers can modify the templates so that they fit the trainees' needs;
- There are several ways to create a course on ILIAS;
- Create new empty course: via the Repository;
- Create course in HISinOne: participant data is taken over;
- Use course template;
- Copy existing course. The content will be adopted, participant data deleted.

Here are some recommendations for an **interactive lecture**:
1. Do not lecture more than five minutes without interruption;
2. Explore the experiences of the trainee to enrich the subject that is being presented;
3. Ask questions continuously to be sure that concepts are being duly grasped;
4. Give rise to doubt;
5. Propose issues related to the topic being treated, ones that require reflection;
6. Stop the lecture at certain moments to present slide shows, pictures, objects, etc.;
7. Use a projector to illustrate and lay out parts of the lecture;
8. Show prints, maps, etc. to support verbal concepts;
9. Use, as much as possible, the framework for exercises, illustrations, schematics;
10. Make constant recapitulations;
11. Oral language is the crucial element for good communication from the instructor, so that deserves attention;
12. At the end of the lecture, review the key points of the subject presented, with active participation from the trainees.

In conclusion, when delivering a lecture, trainers should consider the following steps:
- Introduce the topic - tell the learners what you're going to tell them;
- Tell them what you want to tell them - present the material using visual aids;
- Summarise the key points you've made - tell the learners what you've told them;
- Invite the learners to ask questions.

C. Demonstration

A demonstration is a presentation of a method for doing something. The trainer should use this method to teach a specific skill or technique and/or to model a step-by-step approach. The demonstration allows trainees to see the trainer as an active learner and a model. It allows trainees to observe real signs and how they work. It can be used to illustrate points or procedures efficiently, stimulate interest in a particular topic. To carry out an effective demonstration, the trainer should take into account the following:

Pre-demonstration planning:

- Be clear in your mind about what you are going to demonstrate;
- Analyse the skill(s) you are going to demonstrate:
- Identify the main steps of the activity; and
- Break it down into basic operations and procedures;

- Try to simplify without sacrificing essential skill(s) components; and
- Organise the equipment needed and prepare any teaching aids that will help trainees understand what is involved.

Carrying out the demonstration:

- Make sure everyone can see;
- Arouse the interest of the trainees;
- Describe what you intend to do and why;
- Present the complete activity first, so that trainees know what they will have to do;
- Reveal the main steps of the activity and identify the problem areas;
- Describe each step, showing the skill the trainees will form;
- Adjust the speed of your movements to suit your trainees;
- Inspire confidence in trainees as you go along;
- Try not to over-impress or be too absorbed in your demonstration. Remember that the instructor's goal is to help trainees to achieve competence;
- When finishing the demonstration, check that trainees have fully understood. Ask participants to recap the main points of the activity. This will help to identify gaps in knowledge and reinforce learning.

Trainees need to practice *new skills* in order to achieve a positive result. In providing trainees with individual practice, trainers should:

- Plan specific times when individual training is to be undertaken;
- Arrange the environment with care;
- Ensure that, when trainees begin, they have an achievable objective in mind;
- Ensure that trainees are using the correct procedure from the start of the activity;
- Instil some enthusiasm during the activity;
- Listen to what is going around you to identify those trainees that might get bored, confused, or give wrong advice to each other;
- Allocate your time fairly among trainees;
- Provide accurate feedback for trainees; and
- Encourage and praise trainees for what they are doing or trying to do.

To ensure a good demonstration, the following steps need to be considered by the trainer:

- Introduce the demonstration - what is the purpose?;
- Present the material you're going to use;
- Demonstrate;
- Demonstrate again, explaining each step;
- Invite the learners to ask questions;
- Have the learners practise themselves;
- Discuss how easy/difficult it was for them - summarise.

D. Role play

This is a teaching method in which trainees act out characters assigned to them. The trainers provide the information regarding the situation. Two or more trainees enact parts in a scenario related to a training topic. Role play becomes a very useful teaching method when trainees develop and practise important social and interpersonal skills - conducting drills, briefing and debriefing sessions, etc., for example. It enables trainees to evaluate their performance and feelings in certain situations and develop skills in simulated real-life conditions without the consequences of real-life failure. The trainer structures and facilitates the role playing and conducts the follow-up discussion. The participants will then act out the scenario and afterwards there will be reflection and discussion about the interactions, such as alternative ways of dealing with the situation. The scenario can then be acted out again with changes based on the outcome of the reflection and discussion. In addition, role playing can be used to clarify and demonstrate attitudes and concepts, plan and test solutions to problems, help trainees to prepare for a real situation, and deepen the understanding of real situations.

Role play is a very useful teaching method as it:

- Helps to change trainee's attitudes;
- Enables trainees to see the consequences of their actions on others;
- Provides an opportunity for trainees to see how others might feel/behave in a given situation;
- Provides a safe environment in which participants can explore problems they may feel uncomfortable about discussing in real life;
- Enables trainees to explore alternative approaches to dealing with situations.

To ensure a successful role play, it is necessary to consider:

- Warming up the group;
- Selecting the trainees;
- Setting the stage;
- Preparing the observers;
- Enacting;
- Discussing and evaluating;
- Re-enacting; and
- Generalising.

In order to provide a valuable role play activity, the trainer should:

- Prepare the actors so they understand their roles and the situation;
- Set the climate so the observers know what the situation involves;
- Observe the role play;
- Thank the actors and ask them how they feel about the role play - be sure that they get out of their roles and back to their real selves;

- Share the reactions and observations of the observers;
- Discuss different reactions to what happened;
- Ask the trainees what they have learned and develop principles;
- Ask the trainees how the situation relates to their own lives or jobs;
- Summarise.

E. Case study

A case study is a study of a real-life situation. This is a learning technique that consists of presenting trainees with a real-life situation and requiring them to explore it by acting out the roles of those represented in the situation in order to find the solution to the underlying problem. Cases provide information by outlining a problem-based scenario, where decisions involving value judgments are involved. Learning takes place by discussing the various aspects of a situation or problem. This could be real or imaginary and needs to be well organised if it is to be used effectively. A case study often assesses why something went wrong, discusses common problems in a typical situation and promotes group discussion and group problem-solving. With this learning tool trainees thus have an active role, while the trainer is only a guide.
The general technique is that the background theoretical knowledge should be introduced to the trainees and key aspects should be highlighted. The information provided for the case study should be read through and any points that the trainees raise should be clarified. The situation should be assessed from more than one viewpoint to illustrate different aspects of the case study.

The key points for a successful case study are as follows:

- Introduce the case;
- Give learners time to familiarise themselves with the case;
- Present questions for discussion or the problem to be solved;
- Give learners time to solve the problem/s;
- Have some learners present their solutions/answers;
- Discuss all possible solutions/answers;
- Ask the learners what they have learned from the exercise;
- Ask them how the case might be relevant to their own environments;
- Summarise.

F. Breakout groups

Breakout groups are effective in enhancing intellectual problem-solving skills where the trainees have the chance to talk together and improve self-understanding. It is believed that small group work is one of the most effective ways to develop insight into a task and hone a trainee's competence. Success requires proper management that involves the appropriate layout of seating, the task, the expectations from the trainees, etc.

It is recommended that groups be clearly told what time they will assemble again. For instance, trainees can be divided into groups to discuss the optimum way to develop a stowage plan in the context of cargo loading and discharging.

Breakout groups teaching method:

- Enhances problem-solving skills;
- Helps trainees learn from each other;
- Gives trainees a greater sense of responsibility in the competency-based learning process;
- Promotes team work;
- Clarifies personal values.

The trainer also needs to be aware of the following steps in order to enjoy a valuable breakout group method of instruction:

- Arrange the trainees in groups of four to seven;
- Introduce the task that describes what should be discussed;
- Ask each group to designate a discussion facilitator, a recorder, and a person to present the group's findings to the larger group;
- Check to make sure that each group understands the task;
- Give groups time to discuss - this should not require the trainer's involvement unless the trainees have questions for the trainer;
- Have one person from each group summarise the findings of the group (this could be a solution to a problem, answers to a question, or a summary of ideas);
- Identify common themes that were apparent in the groups' presentations;
- Ask the trainees what they have learned from the exercise;
- Ask them how they might use what they have learned.

G. Practical work

Practical work or laboratory work is seen as an integral part of most science and engineering courses and offers an environment different in many ways from that of the "traditional" lecture or discussion of theoretical issues. Practical work involves the teaching of manual and applied skills, developing problem-solving skills and improving understanding of scientific enquiry methods. In the training of survival skills at sea, medical care, marine, electrical, electronic and control engineering to ensure general technical safety, etc., trainees can achieve enhanced skill and deftness by more practice.

For example, during practical work in a workshop or on board a vessel in port, the boatman:

- Learns to identify the spare parts of electrical, electronic and mechanical devices;
- Follows the technical procedures regarding the replacement of different spare parts of the devices, taking into account the limits and the characteristics required by the maintenance instructions.

Or the boatmaster:

- Monitors different operating regimes of the main and auxiliary engines in order to obtain optimal energy efficiency of the main and auxiliary engines;
- Practices on telegraph remote controllers of the main engines.

H. Simulation

A simulation is an enactment of a real-life situation. It allows trainees to experience decision-making in "real" situations without worrying about the consequences of their decisions. It is a way to apply knowledge, develop skills and examine attitudes in the context of an everyday situation. Simulators provide a learning platform in which all elements of learning can be integrated into a valuable learning experience. Use of a simulator can, with correct assistance, produce positive results on a broad spectrum of attitudes, skills or cognition.

Simulation is the exercise that places trainees in situations that model a real-life environment. It requires trainees to play the role, make decisions and face the consequences. It has been used with great success in inland navigation such as IWT radar operation. Radar simulation equipment must be capable of simulating the operational capabilities of navigational radar equipment that meet all applicable performance standards and must be able to:

- Operate in relative motion head-up mode (inland navigation);
- Model weather, tidal streams, current, shadow sectors, spurious echoes and other propagation effects;
- Generate shorelines and navigational buoys;
- Create a real-time operating environment incorporating at least two ship stations with the ability to change own ship's course and speed, and include parameters for target ships and appropriate communication facilities.

Trainees should understand that simulation can be used to show the real effects of alternative conditions and courses of action. In the simulator context, skill implies a combination of mental and physical dexterity in the face of audio and visual cues to perform tasks to meet specific objectives, with the implication that such skills will transfer to the real world. The trainer's role is to:

- Facilitate the education and training of the trainees;
- Educate with an emphasis on conceptual knowledge, basic skills and an introduction to the actual work;
- Train with an emphasis on the actual tasks and the work to be performed in an authentic setting;
- Examine/assess performance and competency of both individual learners and teams.

A simulator lesson is effective when the following criteria are met:

- The trainee is able to apply the knowledge learned;
- The training objectives for each topic were identified and followed;
- The curriculum content was organised and easy to follow;
- The simulation exercise was pertinent to the learning objective;
- The roles were appropriate to the exercise and the briefing session was useful for the exercise;
- The assessment criteria were clearly explained at the beginning of the exercise;
- The conduct of the simulation exercise was realistic and achieved learning and assessment;
- Objectives;
- The debriefing session achieved its objective, which was to summarise the lessons learned and to reinforce learning objectives;
- The simulation time was sufficient for developing skills outlined in the learning objectives;
- The training aids and audio-visual aids were properly used;
- Class participation and interaction were encouraged.

In order to provide a valuable simulation activity, the trainer should:

- Prepare the trainees to take on specific roles during the simulation;
- Introduce the goals, rules and time frame for the simulation;
- Facilitate the simulation;
- Ask trainees about their reactions to the simulation;
- Ask trainees what they have learned from the simulation and develop principles;
- Ask trainees how the simulation relates to their own lives;
- Summarise.

I. Brainstorming

Brainstorming is a large or small group activity that encourages trainees to focus on a topic and contribute to the free flow of ideas. By expressing ideas and listening to what others say, trainees adjust their previous knowledge or understanding, acquire new information and increase their levels of awareness.

Brainstorming's main purposes are to:

- Focus trainees' attention on a particular topic;
- Generate a quantity of ideas;
- Teach acceptance and respect for individual differences;
- Encourage trainees to take risks in sharing their ideas and opinions;
- Demonstrate to trainees that their knowledge and their language abilities are valued and accepted;
- Introduce the practice of idea-collection prior to beginning tasks such as writing or solving problems;

- Provide an opportunity for trainees to share ideas and expand their existing knowledge by building on each other's contributions.

In order to achieve an effective brainstorming session, the trainer should take into consideration the following:

- In a small or large group, **select a leader and a scribe** (or this may be the instructor);
- **Define the problem or idea to be brainstormed.** Make sure everyone is clear on the topic being explored;
- **Set up the rules for the session**. They should include:
  - Letting the leader have control;
  - Allowing everyone to contribute;
  - Suspending evaluation of ideas until all ideas are gathered;
  - The validity of all contributions;
  - Recording each answer, unless it is a repeat;
  - setting a time limit and stopping when that time is up.
- **Start the brainstorming**. Have the leader select members of the group to share their answers. The scribe should write down all responses if possible so that everyone can see them. Make sure not to evaluate or criticise any answers until the brainstorming is complete;
- Once you have finished brainstorming, go through the results and **begin evaluating the responses**. This can be done quickly by a show of hands to rank the ideas.

J. Computer-based teaching

Computer-based teaching is a method of presenting a pre-programmed schedule of events using a computer. The events can comprise audio, text, photographs, graphics and moving pictures in the form of video and animations in any combination. Instructors need to adapt the computer-based teaching to the number of trainees, and to the needs and abilities of the trainees. For example, in RiverSpeak English training, oral practice and writing on a computer with limitless opportunities to repeat will be more appealing to trainees than the traditional class delivery.

K. Distance learning/e-learning

Trainers are advised to explain to the trainees that distance learning or e-learning refers to the use of various kinds of electronic media and information and communication technologies (ICT) in training and may encompass computer-based or web-based self-study, as well as real-time training and collaboration, that the broadest definition of e-learning is *learning supported by electronic devices* (computer, tablet or phone) and that e-learning and training can involve a great variety of equipment, for example, CD-ROMs and DVDs can be used to provide learning materials.

This includes numerous and various types of pedagogical methods or tools, such as:

- **Virtual learning environment (VLE)**: An online space provided by the institution to support e-learning (internet or intranet). All forms of digital media can be delivered using its various tools. Trainers can post announcements, assignments, check on course activity and participate in class discussions. Trainees can submit their work, read and respond to discussion questions and take quizzes;
- **Personal learning environment (PLE)**: A concept of understanding that trainees use a range of networks, combining both institutional and personal networks and devices to learn;
- **Blackboard Collaborate** is a fully redesigned, high-quality, browser-based web conferencing solution that makes distance teaching and learning simple, crystal-clear and worry-free. Speedy launching and simple deployment mean trainers and trainees can focus on teaching and learning with less hand-holding. And with broadened device support, including Chromebooks, participation is possible anytime, anywhere;
- **Moodle**: An Open Source VLE that is commonly used;
- **Podcast, either video or audio**: A method of delivering multimedia content. Podcasts can also be used to very good effect, again to supplement lectures or to get trainees to interact outside taught sessions;
- **Discussion forum**: A communication tool for posting messages, work, comments or opinions. Often text-based but some offer the ability to use multimedia;
- **Blog**: A way of posting educational material online, normally organised by date and topic category. Images, video and audio can be shared with this tool. Blogs typically allow commenting, which can be a useful feature for teaching and learning;
- **Webinars**: are an effective alternative or supplement to traditional lectures, using programs such as Elluminate Live! This is a communication tool that includes integrated Voice over IP and teleconferencing, public and private chat, quizzing and polling, emoticons, and a webcam tool. The software includes several visual tools, including whiteboard, application sharing, file transfer, and web tour. The software also includes a record feature that allows the moderator/instructor to record the class for others to watch later as well as a graphing tool, breakout rooms for group work, and timer. The whiteboard supports the uploading of presentations for viewing on the whiteboard for the class or meeting;
- **Web 2.0**: This is essentially a leveraging of some of the more recent developments to support better interaction including social features. Many of these 2.0 web services provide community tools for sharing and commenting on resources, such as video.

- **Whiteboards**: Interactive whiteboards ("smartboards") allow instructors and trainees to write on the touch screen, so learning becomes interactive and engaging;
- **Voice-centred technology**, such as CD or MP3 recordings or Webcasts;
- **Video technology**, such as instructional videos, DVDs, and interactive videoconferencing;
- **Computers, laptops, tablets, mobile devices**.

L. Mentoring

Mentoring is a tool that organisations can use to nurture and grow the trainees. It can be an informal practice or a formal programme. Mentors demonstrate, explain and model. The mentor's job is to promote intentional learning, which includes capacity-building through methods such as instructing, coaching, providing experiences, modelling and advising. Successful mentoring means sharing responsibility for learning regardless of the facilities, the subject matter, the timing and all other variables. Applying this approach to on-board training will yield a good result.

The trainer should explain to the trainees that the mentor is a helper, not a supervisor or evaluator, and a very special person, a model of professionalism.

Being a trainee mentor can be daunting, especially with your first few trainees. They may be prone to mistakes or errors in judgment and benefit greatly from the guidance of an experienced trainer. As their mentor, the trainer can give them helpful feedback and guide them toward the best and most effective competency-based teaching methods. A mentor should possess the following essential qualities:

- A range of interpersonal skills to fit a variety of professional encounters and situations;
- Good working knowledge of a wide range of teaching methods, alternative modalities of learning and styles of teaching and learning that affect a trainee's achievement;
- Ability to use coaching processes that foster increased self-direction and self-responsibility of the trainee;
- Effective communication skills;
- Understanding the stages of instructor trainee development within the context of how adults learn.

M. Blended teaching and learning

The Blended approach to teaching and learning uses a combination of online and face-to-face teaching and learning modes and methods. A course (or module, programme or other form of teaching) may be mostly online with minimal face-to-face contact or mainly taught face-to-face with some content or interaction online. The balance between face-to-face teaching and online content depends on what the instructor involved decides.

It is used:

- To combine or mix modes of web-based technology (e.g. live virtual classroom, self-paced instruction, collaborative learning, streaming video, audio and text) to accomplish an educational goal;
- To combine various pedagogical approaches (e.g. constructivism, behaviourism, cognitivism) to produce an optimal learning outcome with or without instructional technology;
- To combine any form of instructional technology (e.g. videotape, CD-ROM, web-based training, film) with face-to-face instructor-led training; and
- To mix or combine innovative instructional technology such as Virtual Reality, Augmented Reality or Mixed Reality with actual job tasks in order to create a harmonious effect of learning and training.

N. Seminar/workshop

A workshop is defined as an assembled group who share a common interest or problem. They meet together to improve their individual skills in a subject through intensive study, research, practice and discussion. Trainers are advised to explain to the trainees that teaching workshops, labs and tutorials allow trainers to enjoy the benefits of teaching small groups of 10 to 15 trainees. Small groups, as opposed to large classes, are more easily trainee-centred. Small groups can help trainees learn to collaborate and communicate and the group process itself becomes a learning tool. Participating in classes can help trainees to learn:

- Successful collaboration and effective task sharing techniques;
- Inter-personal skills;
- Listening skills;
- Verbal communication skills;
- About the synergy that can result from group discussions - a group can often produce a higher quality solution to a problem than an individual is capable of alone.

Also, effective small group teaching presents several benefits:

- Clear learning goals;
- Active participation;
- An accepting, non-threatening group climate;
- Cooperative rather than competitive process;
- Equal distribution of leadership functions;
- Enjoyable group experience;
- Course content is covered;
- Evaluation as an integral part of the learning process;
- Trainees attend regularly;
- Trainees come prepared.

When planning a workshop, the following steps should be followed:

Before the workshop, the trainer should:

1. **Define the objectives**. *What is he/she trying to achieve? What is most important? What are the learning goals for the session?* The answers to these questions will determine the trainer's choice of teaching and training methods and aids, the sequence for the competency-based learning activities and the appropriate evaluation strategy.
2. **Determine the teaching method**. Once the trainer has determined his/her learning objectives for the workshop, he/she should think about the most appropriate teaching method to help meet those goals. The final content and format of the workshop will be influenced by the subject matter, by the trainer's teaching goals and by the trainees' past experiences with the topic.
3. **Be flexible**. Planning ahead is important, but it's also important to build in some back-ups for when things don't go according to plan.

During the workshop itself the trainer should:

1. **Create a relaxed atmosphere for learning**. If this is his/her first class, the trainer introduces himself/herself and has the class get to know each other. Then the trainer opens himself/herself up to questions and suggestions.
2. **Outline the objectives for the workshop.** The trainer explains to the class what he/she hopes to accomplish in the available time; outlines what is expected of the trainees and the purpose behind all the tasks; provides a schedule, setting benchmarks that trainees can aim for; gets feedback on where the class stands and is prepared to make some changes to best meet the needs of the trainees.
3. **Encourage active participation and allow for problem solving and/or skill acquisition.** The trainer involves the group in all phases of the workshop; invites questions, group discussion, and debate; encourages the trainees to learn from each other – if a problem is presented, allows the class to offer their solutions rather than giving them the answer.
4. **Provide relevant and practical information.** Although active participation and interaction are essential to a successful workshop, trainees must also feel that they have learned something. It is best when the trainer begins the class with a mini-lecture, setting the tone for the activities, covering the required knowledge and ensuring a common ground for all trainees.
5. **Vary the activities and style.** It is advisable that the trainer keeps the workshop flowing at a pace that keeps trainees' attention, leaving room for the group to slow down or speed up.
6. **Summarise** the workshop and request feedback from the class. It is beneficial to have the trainer leave time at the end to restate the learning objectives and what he/she hoped to achieve; synthesise the main points and tie the activities in to concrete learning goals for the course; ask trainees to summarise what they have learned during the workshop and if they found the method helpful.

The **seminar** method is the most modern and advanced method of teaching. Seminars are simply a group of trainees coming together in a classroom or online for the discussion and learning of specific techniques and topics. Usually there are several keynote speakers within each seminar and these speakers are usually experts in their own fields or topics. Several topic reviews are scheduled each day throughout the seminar, and attendees can usually make their choice of topics from among these scheduled events. Every one present is supposed to take active part in the following discussions. It familiarises the trainees with the selected topic more extensively. It allows them to interact with the practical problems that are faced during research work. It is an informal method of teaching.

The procedure for conducting a successful competency-based seminar is the following:

- A topic is allotted to the trainee from the syllabus as per his/her choice or interest. At least fifteen days are given for preparation of the topic. The date of the seminar is fixed on the same day of allotment;
- Necessary books and articles and lists of reference books are provided to the trainees as per their requirement from the library. Trainees go to the library and search the required material and data and prepare their own notes. They also use the internet facility;
- The collected information and data are checked and rearranged by the trainer. Now the setting is ready for the final seminar;
- The trainee delivers the seminar in the class or online. The use of maps, diagrams and charts, photos and/or videos along with the blackboard/whiteboard/smart board is allowed to explain the topic. If a trainee wishes to use PowerPoint, this is also permitted;
- After presentation, the topic is open for discussion. Questions are asked by the trainees and they are answered by the seminar coordinator. If necessary, the instructor interferes and takes part in the discussion;
- The details of the topic and other related information that is not included in the seminar are provided by the trainer. On average, twenty minutes are available for one trainee. The duration of time may change.

O. Field visit

This method allows trainees to make direct contact with the real-life experience defined as the main output of training and can be used to consolidate their knowledge, skills, abilities and competencies and to generate awareness. The field visit must be designed to allow the trainees to interact and participate in the different experiences and also to apprehend the environment of work-in-progress. This method also allows the implementation of new ideas and changes to trainees' perception about a specific field of expertise.

It is important that the trainer should demonstrate the use of various teaching aids. It is appropriate for the trainer to operate all the teaching aids available from the very beginning. It is strongly recommended that trainees try out teaching aids, adding to their hands-on experiences of such tools.

It is desirable that trainees are evaluated in their usage of different teaching aids as required. Ideally, the proficiency and appropriateness in using selected teaching aids should be the focus.

4.2.3.3 Select the Appropriate Teaching and Training Aids

The objective of this part is to provide trainees with the knowledge of the various teaching aids and the opportunity to have hands-on experiences. Using appropriate teaching aids is an integral part of a successful lesson. More importantly, new technology and teaching aids are effective ways to motivate trainees and increase the appeal of the classroom. Trainees should be made to appreciate why different teaching aids are used. Among other factors, the diversity of learning styles means that the use of different teaching methods and aids can allow each learner to have an enhanced learning experience.

A. Boards and flipcharts

The most commonly used aids are boards and flipcharts, so these are the first aids that the trainees should consider. Boards of various types are available to most instructors. The types include chalkboards, whiteboards, magnetic boards and flipcharts. The instructors should begin by introducing the trainees to the principles of board work by asking them to make a list of the advantages and the disadvantages of boards. This should be followed by a review of the different types of boards and flipcharts that are available.

The trainees should be asked to produce a checklist for the use of boards and flipcharts in the classroom. This should include most of the following:

- Ensure all of the learners can see the board clearly - check this yourself;
- Remove any old work from the board before you start;
- Keep any writing or diagrams simple and clear;
- Make sure that any writing is large enough to read;
- Items can be emphasised by using colour, underlining, using capital letters;
- A little colour adds emphasis but too much becomes messy and confusing;
- Do not use abbreviations or symbols if these can be avoided;
- Do not write words vertically or at odd angles;
- Use a template if a frequently drawn diagram has to be accurate;
- Do not try and talk to the class while facing the board.

B. SMART boards

SMART boards are a sophisticated replacement of the traditional overhead projector. The interactive board turns a typical classroom into a fun learning environment. It enriches classrooms in several ways by providing hands-on collaboration and creating the perfect learning setting.

C. Electronic slides

Microsoft PowerPoint is a powerful tool for creating effective presentation programmes. With PowerPoint, the instructor can create slides, notes or printed transparencies. It provides the trainer with a versatile tool for enhancing visual presentations in conjunction with projection systems, integrated whiteboards or other facilities.

With PowerPoint, trainers can use text, photos, illustrations, drawings, tables, graphs and movies to effectively walk an audience through a presentation. PowerPoint is used for both educational and business purposes because it allows for easy and creative presentations.

One important point that the trainer should make the trainee aware of when devising a presentation is understanding his/her target audience. It helps a great deal in brainstorming, creating and presenting too. PowerPoint presentations combined with videos can be successfully used to transfer the knowledge for almost every competence at both the operational and the managerial level, for example,

- Regarding the specific rules and regulations, any boatmaster sailing on board an inland waterways vessel must ensure compliance with the requirements for environmental protection with regard to, e.g. fuel efficiency, bunkering, emission levels, shallow-water effects, connection to shore power and waste management;
- Materials available on board such as winches, bollards, ropes and wires when considering relevant work safety measures, including the use of personal protective and rescue equipment;
- Communications with the wheelhouse using VHF and intercom communication systems and hand signals;

- The characteristics of main European inland waterways, ports and terminals;
- Connection and disconnection of push/barge combinations using the required equipment and materials;
- Planning a journey and conducting navigation in difficult situations;
- Traffic regulations applicable to navigation on inland waterways to avoid damage (e.g. collision) and appropriate actions to take in the event of an emergency situation (beaching, collision, grounding, etc.).

D. Handouts

The purpose and use of handout material should be reviewed. Trainees should establish why handout material is used in their own teaching and training. There should be some theoretical input on the design of handout material. Many lectures/classes involve some types of handout material and there are several different styles. Some examples are included for reference and for discussion.

E. Video Projectors

The trainee should demonstrate overlay and reveal techniques. Trainees need to compare the advantages and disadvantages of video-projectors. Practical work in small groups with trainees making presentations on a video projector is necessary.

F. Simulator

All parties involved should ensure that the aims and objectives of simulator-based training are defined within an overall training programme and that specific training objectives and tasks are selected so as to relate as closely as possible to shipboard tasks and practices.

In conducting simulator-based training, trainers must ensure that:

- Trainees are adequately briefed beforehand on the exercise objectives and tasks and are given sufficient planning time before the exercise starts;
- Trainees have adequate familiarisation time on the simulator and with its equipment before any training or assessment exercise commences;
- Guidance given and exercise stimuli are appropriate to the selected exercise objectives and tasks and to the trainee's level of experience;
- Exercises are effectively monitored, supported by audio and visual observation of trainee activity and pre- and post-exercise evaluation reports;
- A debriefing session is facilitated to ensure that training objectives have been met and that operational skills demonstrated are of an approved standard;
- The use of peer assessment during debriefing is encouraged; and
- Simulator exercises are designed and tested so as to ensure their suitability for the specified training objectives.

Simulated systems can be used to train: *vessel handling and manoeuvring, navigation, radio communications and main and auxiliary machinery operation.*

In inland navigation, using so-called *Full Mission Ship-Handling Simulators* is recommended. Their performance requirements must at least meet those for inland waterway vessels. Compared to simulators designed for limited tasks (e.g. radar operating), Full Mission Ship-Handling Simulators are complex both in terms of the equipment fitted and in the operations to be performed. This implies greater responsibility on the part of the instructor, who must be prepared to intervene in the design and conduct of training and assessment exercises when using these simulators.

G. Ship Models

Ship models can be helpful in allowing trainees to gain a better picture of a process. Some models such as a ship model and buoyant model can be very elaborate. A simple model of a derrick can be made to illustrate the operation. It is important that the model is neither too simple nor too complex.

H. Manned scale-model ships

Manned models are fully scaled model ships used in the professional training and development of mariners in the art of handling a ship. The models are in fact a form of simulation and have the same power to weight ratio as its full-sized counterpart.

Manned model training complements bridge simulator training but the emphasis on the models is on the final phase of berthing a ship rather than bridge teamwork training, which is best carried out on a computerised bridge simulator.

Scale manned models are model ships that can carry and be handled by at least one person on an open expanse of water. They must behave just like real ships, giving the boatmaster the same sensations. Physical conditions such as wind, currents, waves, water depths, channels and berths must be reproduced realistically. Manned models are used for research (e.g. ship behaviour), engineering (e.g. port layout) and for training in ship-handling (e.g. pilots, boatmasters and boatmen). They are usually at 1:25 scale.

The aim of training on manned models is to enable inland waterway crew members to acquire or to develop manoeuvring skills through a better understanding of a ship's behaviour as it sails in restricted water conditions at manoeuvring speed.

Manned models are considered by both maritime and river pilots as the next best thing to a full-scale prototype for understanding a ship's behaviour. Trainees participating in courses using scale manned models will form and improve their skills and competencies in berthing, getting underway and overtaking other ships in canals, under a wide range of conditions, involving cross-currents, wind, rudder failure, etc. Instructors have to explain and demonstrate to trainees that scale models are complementary to computer simulators. While manoeuvres with currents, waves, tugs, anchors, canal effects, etc. are reproduced more accurately on scale models, numerical simulators are more realistic when it comes to the bridge environment. Moreover, boatmasters, boatmen and pilots will develop and acquire new skills and a better understanding of a ship's behaviour in restricted water conditions at manoeuvring speed.

The trainee must be clearly informed that training on manned models is still the best way to acquire some reflexes which, when the time comes, will make all the difference between being good and being the best. Training on the scale models provides experience that could never be gained on real ships for the simple reason that neither ship-owners nor local authorities would allow such risks to be taken.

I. Onboard training

Today's ship owners, managers and operators are under constant pressure to demonstrate that the vessels they operate are safe - both in the material sense and in the ability of the crew to operate them safely. Training (practical exercises) and practice on board cargo vessels are valuable for forming all competences at both the operational and the managerial level, for example:

- Practising berthing and departure manoeuvres;
- Use of vhf and intercom communication systems and hand signals;
- Convoy set-up and disentanglement manoeuvre and anchor manoeuvres;
- Characteristics of a given inland waterways, from locks and lifts to respecting traffic regulations, avoiding damage, environmental pollution, etc.;
- Navigating the vessel when in an unavoidable collision situation in such a way that damage to cargo and persons will be as limited as possible;
- Taking appropriate actions after a collision and assessing the damage and controlling the situation;
- Cleaning tanks, safety, loading procedure;
- Preparations for loading/unloading, keeping watch and administration;
- Use of deck equipment, anchor and winches.

J. Audio and video

Suitable audio-visual material should be provided for the trainees to review. A list of possible commercial videos should be provided by the trainer. The trainer should decide which key points are relevant and make up some suitable questions for trainees to answer after viewing the material. Training videos, if used in an interactive way, can stimulate learning, increase enjoyment and enhance the message. When using a training video, the instructor should have a clear purpose in mind and understand why it is being shown and how it will contribute to the overall objectives of the programme or activity.

There are a lot of videos to be used by trainers in competency-based training on a subject matter. Here are some examples:

- Safe Line Handling Practices for the Inland Waterways https://www.youtube.com/watch?v=ldUFS51f60o
- Inland Navigation Europe - https://www.youtube.com/watch?v=UK-4F8DxAz0
- Skipper inland Navigation (1-4) - https://www.youtube.com/watch?v=72aGQK3RQGQ
- Inland Navigation Jobs - https://www.youtube.com/watch?v=Ha3xnhXoJKs
- Passing moored ship in a canal with manned ship models at Port Revel Ship-handling Training Centre - https://www.youtube.com/watch?v=9jwb0-r0haw
- Failed Ship-to-Ship underway manoeuvre - Port Revel Ship-handling - https://www.youtube.com/watch?v=YvyNMIEZbG4

K. E-learning platforms

An e-learning platform is an integrated set of interactive online services that provide instructors, learners and others involved in education and training with information, tools and resources to support and enhance education and training delivery and management.

The functionality of e-learning platforms typically includes access to learning content and tests, communication and collaboration tools for trainees and course management and assessment facilities for instructors.

Numerous e-learning platforms are available today. Some of today's most popular platforms are the commercial systems Blackboard Collaborate, Clix, and Desire2Learn, and the open-source platforms ILIAS, Moodle, OLAT, etc. Moodle is the most widely used learning platform in the world. There are now over 83,000 registered Moodle installations serving 120 languages and there are 100 million users of this learning management system across the globe.

Here are a few things any instructor needs from a quality e-learning Platform:

- Focuses on content that improves performance on the job;
- Breaks down complex courses into more comprehensible parts;
- Equips learners to discover content objectives on their own;
- Understands that trainees can add to and expand training content;
- Displays content in ways that increase understanding and effectiveness.

L. Massive Open Online Courses (MOOC)

MOOC is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials such as filmed lectures, readings and problem sets, many MOOCs provide interactive user forums to support community interactions among trainees, professors and teaching assistants (TAs). Subjects like lifeboat releasing operations, oil-water separator operations, etc. can be made into a MOOC for trainees to learn.

Many MOOCs use video lectures, employing the old form of teaching (lecturing) using a new technology. Because of massive enrolments, MOOCs require instructional design that facilitates large-scale feedback and interaction. The two basic approaches are:

- Peer-review and group collaboration;
- Automated feedback through objective, online assessments, e.g. quizzes and exams.

M. Gamification

Gamification is a new concept as a maritime, aviation and inland waterways training technique and educational tool. In general, it is any game-like program with a primary intent other than simple entertainment. For our purposes, the primary intent is training or education.

Trainers can think of gamification as the combination of a simulator (e.g. bridge simulator) with a reward system. The intent is to increase a trainee's motivation in learning.

Studies have shown that gamification:

- Improves participation rates;
- Improves teamwork;
- Increases time on task;
- Deepens engagement;
- Causes trainees to return to training more often;
- Improves training completion rates.

One example is ShipSim – made by VSTEP in the Netherlands, to teach boatmen the basics on ship-handling and proper orders to the helm. According to the ShipSim website (http://www.shipsim.com), ShipSim is a "*… game that pushes the boundaries of simulation gaming … Featuring stunning visuals, accurate vessel behaviour, famous locations and ports all over the world and missions based on actual events*".

N. Tests and Quizzes

Building a quiz supported by electronic devices gives the trainer different advantages. It offers the possibility of building a library of questions and using these questions multiple times, which saves time. In addition, it gives quick insight into the trainees' results and the strengths and weaknesses of the class.

For the trainee, it provides the opportunity for immediate feedback and insight into what needs extra attention. The feedback given should offer information on how to get extra information about the weaker subjects.

Socrative is a free online tool to enlarge the engagement in the classroom. It is a tool used in synchronous learning. With the tool, the trainer is able to take quizzes with the trainees and evaluate the outcomes in real time or use the reports to get inside trainees' minds and determine the best approach for that lesson. More information can be found on: https://www.socrative.com/ .

O. Webinar

A webinar is an online seminar. Trainees can follow the lesson from different locations. The learning takes place at the same time. It is also possible to record the webinar and make it available for trainees at a later moment. Most software programs for webinars have features to enrich the webinar - with a poll, a presentation or chat function, for example. The main advantage is that no one has to travel to get to a webinar or make any special arrangements or preparations. However, besides its advantages, there can be unexpected disadvantages and problems with running or viewing a webinar.

P. Digital Portfolio/Logbook

In a portfolio, evidence of acquired competencies is collected. A trainee can upload documents to prove certain skills. The portfolio follows a standard for a competence. All of the evidence gathered provides insight into the trainee's progress in the required competence. The portfolio is commonly used in vocational education.

The learning platform Moodle has a new feature: the Competency framework and Learning plan. Moodle is an open-source learning platform (https://moodle.org/). It is designed to provide educators, administrators and learners with an integrated system to create personal learning environments. Education and training schools and institutes can download the software to a server to create their own learning environments.

By means of this platform, the trainer can design different modules with the use of activities like an assignment, quiz, lesson, glossary or workshop.
With the features "Competency Framework" and the "Learning Plan", trainers can create a personal learning plan for trainees. As the name indicates, the Competency Framework gives trainers the opportunity to build a framework around a competency. In this case, the ES-QIN competency tables can be used. Different modules and assignments can be linked to the competence, so a trainee can build a portfolio based on the Personal Learning Plan created for the personal goals of the trainee.

Q. E-learning tools

Digitalisation offers flexibility, simpler access, a wealth of potential multimedia resources and ways to motivate adults to engage in learning.

R. European Training Record Book (ETRB)

ETRB may be used as part of an approved training programme. It allows for the recording of training and assessment of satisfactorily demonstrated competencies acquired by the trainees.
There are several benefits of using a training record book. It:

- Allows for the accrual of high-quality experience aboard inland navigation vessels;
- Provides for the delivery of competency-based training and assessment;
- Provides employers with qualified crew of high standards through a skills acquisition process;
- Provides the candidate with a greater exposure to a variety of tasks with flexibility in gaining experience;
- Allows candidates to gain hands-on experience, basic knowledge and confidence prior to undertaking their safety oral examination, obtaining the union certificate at ol or ml level and gaining employment;
- Enables new entrants to gain certification as a possible first step in their inland navigation career progression.

S. Virtual Reality (VR)

Virtual Reality is computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.

Virtual reality is based on an advanced combination of both software and hardware. Present-day VR technology utilises multi-projected environments or VR headsets to produce lifelike sounds, images and other sensations that simulate the physical presence of a user in the simulated world.

Some of the advantages of VR are:

- Creates a realistic world, offering far better visuals that give the user a feeling of being in a different world while playing games, or watching the scenery, etc. and experiencing every move as if it were real with all those visual and sound effects along with countless other sensations;
- Safe Practice / Simulation. Training and practice can be conducted by simulating potentially dangerous real-world operations like ship handling, engine repair, etc.; this would simply be the best practical advantage of this technology. Trainees can easily learn to perform operations, manoeuvre a vessel and many more skills without risking their lives and/or the lives of others;
- Through Virtual Reality users can experiment with an artificial environment;
- Increased Learning Possibilities.

Disadvantages:

- The equipment used in virtual reality is very expensive;
- It consists of complex technology;
- In a virtual reality environment we can't move about on our own like in the real world;
- Isolation. After spending significant amounts of time in the virtual world, trainees become addicted to it and tend to enjoy it more there than in the real world. Thus they spend more time with their friends in the virtual world, as is often seen in gaming. This eventually leads them to become isolated from the real world.

T. Augmented Reality (AR)

Augmented Reality is an enhanced version of what we see or experience in the real world. The environment created in Augmented Reality uses different video, auditory and sensory methods delivered by technology. Augmented Reality can help create an entirely new, interactive experience for users. Moreover, augmented reality offers a solution to the problem of being left out of the latest technological advances.

The following advantages of AR make it a perfect tool for many sectors in the future:

- Enhanced Experience. Users will be able to take their phones and hold them up in front of a certain area, such as a building, engine room or natural landmark. The app then overlays information on top of what they see, or they have to do, providing more depth than could otherwise be done by just looking at something without AR technology like this;
- Easy to Use. For mobile phone users, Augmented Reality is really easy to use. Just point the camera at an object and the app will show you what it does with that particular item.

U. Mixed Reality (MR)
Mixed Reality merges real and virtual worlds to produce hybrid synthetic environments where physical and digital objects co-exist and interact in real time.

It is recommended that instructors should demonstrate the use of various teaching aids. It is wonderful if instructors can operate or try out teaching aids personally from the very beginning. If trainees are asked to discuss and share their experiences in using some of the teaching aids, this can facilitate and deepen their understanding of the various teaching aids. Comparing the advantages and disadvantages of different teaching aids is a good approach.
It is desirable that trainees are evaluated in their selection of different teaching aids as required; their selection is supposed to cater for the specific class needs.

To summarise one very important aspect, the following should be mentioned: the instructor should train the trainees in such a way that they understand that various teaching methods and aids can be used together during training or instruction, for example:

- Lectures supported by PowerPoint presentations, photos, videos followed by demonstration and practical activity on board IN vessels are suitable in forming all competences at both the operational and the managerial level – for example, presenting European inland waterways including locks and lifts according to navigation agreements, charts/maps, Notices to Skippers/Mariners and other publications;
- Lectures and demonstrations supported by e-learning: the boatmaster;
- Monitors main engines and auxiliary machinery and equipment;
- Organises safe use and application, maintenance and repair of the craft's;
- Electro-technical devices;
- Describes the electrical panel with fuses and relays;
- Learns how to coordinate the safe maintenance activity on board of the ship, etc.;
- Lectures and demonstrations supported by e-learning materials, textbooks and videos;
- The boatman learns how to perform diagnosis and repair of stationary and moving parts of an engine, electrical machines and devices, propellers and turbines;
- Practising radio communication with real VHF-devices in a training room/in a simulator followed by e-learning module for training exam questions and for preparing the VHF-device as well as for training communication phrases;
- For the practical aspects of skills training, simulations and gamification offer the opportunity to present scenarios to the trainee that could never be replicated in hands-on training. Consequently, blending e-learning, simulations and hands-on training together provides the best skill training outcomes.

4.2.4 Evaluating teaching, learning and training

The major objective of this part is to enable trainees to understand the necessity of learning and training evaluation. The desired learning outcomes and the opportunities to learn constitute the integrated learning needs for a trainee of a course or programme. The trainees should demonstrate their abilities to develop the evaluation questions reflecting the purpose of evaluation as well as priorities and needs of trainees. Instructors should keep in mind that quality management is an important factor that can maintain a high standard of course delivery.

Trainees must be aware of the desired learning outcomes with regard to course effectiveness. They need to consider the learning outcomes that may influence course effectiveness. The instructors are recommended to organise a discussion with a checklist pointing to the desired learning outcomes in class among trainees.

According to Article 17 of Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and assessment of competences:

"The Commission shall adopt delegated acts in accordance with Article 31 to supplement this Directive by laying down the standards for competences and corresponding knowledge and skills in compliance with the essential requirements set out in Annex II.2. Member States shall ensure that persons who apply for the documents referred to in Articles 4, 5 and 6 demonstrate, where applicable, that they meet the standards of competence referred to in paragraph 1 of this Article by passing an examination that was organised:(a) under the responsibility of an administrative authority in accordance with Article 18 or; (b) as part of a training programme approved in accordance with Article 19".

The effectiveness of any evaluation depends largely on the accuracy of the description of what is to be evaluated. Thus, to assist instructors, the detailed teaching syllabus uses descriptive verbs for the specific learning outcomes, mostly taken from the widely used revised Bloom's taxonomy. These learning outcomes provide a sound base for the construction of suitable tests for evaluating participant progress.

Evaluation/assessment is a way of finding out if learning has taken place. It helps the assessor (instructor), to establish whether the learner has the required skills and knowledge at a given point during a course or towards a qualification.

Evaluation/assessment can also be used:

- To assist a trainee's learning;
- To identify a trainee's strengths and weaknesses;
- To assess the effectiveness of a specific instructional strategy;
- To assess and improve the effectiveness of curriculum programmes;
- To assess and improve teaching effectiveness.

The criteria for evaluating competences specified in column four of the competence table in the ES-QIN - Standards of competence are the main reference for the implementation of assessment and should be clearly understood and referred to when performing such actions. The demonstration of competence for compliance with different function requirements differ. For some skills such as the calculation of trim and stability for a specific loading condition, a written exam is most likely the proper way to check the trainee's ability. For testing passage design, on the other hand, a practical test with a nautical chart is the recommended way to evaluate the candidate. The trainee instructor therefore needs to realise that there is no uniform method of evaluation. Generally, in order to select the proper assessment measures, the training instructor should first be aware of the expected learning outcome in terms of the scope of knowledge, understanding and competence required.

4.2.4.1 Types Of Evaluation/Assessment

The ideal types of evaluation/assessment for a specific subject or topic depend on various aspects including internal and external conditions.

The internal conditions may include the outcome of the subject, the number of trainees, the available staff and teaching facilities.

The external conditions and influential factors are mainly the impact of industry expectations, for instance the competence requirement set out in Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence. Therefore, the best practice is to balance these conditions in order to achieve practical evaluation and assessment measures. This topic will review and examine different evaluation/assessment measures for the trainee instructor to consider. The different types of evaluation/assessment can be classified as:

- **Initial/Diagnostic assessment** is an evaluation of a trainee's skills, knowledge, strengths and areas for development, which aims to generate a general view of the trainee's knowledge and skill level for the planning of the course or to assess the effect of the training in the middle of a course. It is recommended that this kind of assessment should be carried out before the start of a course/qualification to ensure trainees are on the right path. Depending on the available resources in the training institution, this assessment could be conducted individually and/or collectively;
- **Formative assessment** is an on-going, in-process evaluation. The result of this assessment provides information on a trainee's progress and may also be used to encourage and motivate. Formative assessment is a basic assessment skill that should be mastered by trainees. The proper use of it not only helps trainees to assess the impact of their teaching but also gives them a clear view of their own learning results. The purpose of formative assessment is therefore to provide feedback to trainees, motivate them, diagnose their strengths and weaknesses and help them develop self-awareness;
- **Summative assessment** is a final assessment aiming to check the performance of the trainee where the result could be used to qualify or certify a trainee. It is designed to measure the trainee's achievement against defined objectives and targets. Thus one of the purposes of summative assessment is to pass/fail or grade a candidate. Oral and written examination should both be included and usually take place at the end of a course. Meanwhile, the result of the assessment is also a valuable form of feedback on the teaching itself; this should be examined carefully by the trainee instructor in order to identify deficiencies in the training. Such feedback shows the trainee instructor the areas where additional emphasis or further study may be needed for the teaching to improve.

The purpose of assessment is to provide feedback to an instructor on the trainees' learning, the strengths and weaknesses of a module and the teaching quality and to stimulate self-reflection within the trainees. Some methods of assessment that could be used depending upon the course/qualification are as follows and should all be adapted to suit individual needs.

- Observation (in Oral examination, Simulation exercises, Practical demonstration);
- Questions (written or oral);
- Tests;
- Assignments, activities, projects, tasks and/or case studies;
- Simulations;
- Computer Based Training (CBT).

There are several types of tests in teaching/training - all with specific objectives. Some tests that are commonly used in teaching are mentioned below:

- **Prerequisite tests** used to assess whether the trainees have enough knowledge, skill and attitude to qualify their entry to the first, second, third or fourth year.
- **Progress tests** to provide feedback to the trainee (and the instructor) on his/her progress. It indicates how the participant is doing with respect to the

determined learning objectives. The results of the progress test may be of a diagnostic nature (see diagnostic test). Most important, however, is that feedback is given to the participants on a regular basis and in an adequate way.

- **Diagnostic tests** used to find the weak spots or shortcomings of the trainee, a group of participants or the learning and teaching process. The purpose of these tests is either to give the participant(s) specific additional training so they can keep up with the programme, or to adjust the learning/ teaching process.
- **Selective tests** used to find out whether and to what degree the trainee has achieved the learning objectives. If the trainee has passed these tests, she/he may continue her/his study or, in the case of a final test, she/he will receive a certificate of competence.

The evaluation methods should be based on clearly defined objectives and truly represent what is meant to be assessed. There should be a reasonable balance between the subject topics involved and also in the testing of a trainee's KNOWLEDGE, UNDERSTANDING AND PROFICIENCY of the concepts.

Assessment should also be reliable (if the assessment was done again with a similar group/learner the evaluator would receive similar results), valid and transparent. In other words, the assessment should be as objective as possible. The same trainer may have to deliver the same subject to different groups of learners at different times. If other assessors are assessing the same course/qualification, then the outcome should be the same or similar depending on the task.

To be reliable, an evaluation procedure should produce consistent results no matter which set of papers or version of the test is being used.

If trainers assess their own trainees, they need to know what they are to assess and how to do it. The "what" will be evident from the standards and learning outcomes of the course/qualification they are delivering. The "how" may already be decided for them if it is an assignment, test or examination.

Trainers need to consider the best way to assess the skills, knowledge and attitudes of their trainees, whether this is formative and/or summative, as well as how the assessment ensures validity and reliability.

All work assessed should be **valid, authentic, current, sufficient** and **reliable**; this is often known as VACSR - valid assessments create standard results.

Where:

- **Valid** – the work is relevant to the standards/criteria being assessed;
- **Authentic** – the work has been produced solely by the trainee;
- **Current** – the work is still relevant at the time of assessment;
- **Sufficient** – the work covers all the standards/ criteria;
- **Reliable** – the work is consistent across all trainees, over time and at the required level.

It is important to note that no single method can satisfactorily measure knowledge and skills over the entire range of matters to be tested for the assessment of competence.

Trainers and assessors should take care to select the method most appropriate to the particular aspect of competence to be tested, bearing in mind the need to frame questions which relate as realistically as possible to the requirements of boatman or boatmaster.

Practical assessment

Aside from theoretical assessments, trainers and/or assessors must assess tasks in which the trainee is actually actively performing. This can come in many forms, from the various activities in the engine room to those activities on deck.

To develop an assessment, trainers need to agree with their colleagues and the authority as to what needs to be assessed and on the accepted method. Also, they need to be creative, objective and constructive.
In order to match the task, the trainer who plans to evaluate/assess using all of the columns in the ES-QIN competency table should ask himself/herself questions such as the following:

- *Will the scenario address the objective (apply, calculate, etc.)?*
- *Is the scenario I am developing realistic? Does it mimic a real situation?*
- *Have I developed pass/fail criteria in an objective manner?*
- *Can the participant complete the task in the required time?*

Where simulators are used to assess the ability of trainees to demonstrate levels of competency, the assessor shall ensure that:

- Performance criteria are identified clearly and explicitly and are valid and available to the trainees;
- Assessment criteria are established clearly and are explicit to ensure the reliability and uniformity of the assessment and to optimise objective measurement and evaluation, so that subjective judgments are kept to a minimum;

- Trainees are briefed clearly on the tasks and/or skills to be assessed and on the tasks and performance criteria by which their competency will be determined;
- Assessment of performance takes into account normal operating procedures and any behavioural interaction with other trainees on the simulator or simulator staff;
- Scoring or grading methods to assess performance are used with caution until they have been validated; and
- The prime criterion is that a trainee demonstrates the ability to carry out a task safely and effectively to the satisfaction of the assessor.

Feedback

During the education and training process, trainers should always provide feedback, whether the tasks given are for practice, training or are actual assessment items. There are various ways to provide effective and constructive feedback.

Experienced trainers are recommended to explain to trainees that this part of the learning process is vital and trainees should appreciate the enormous role they now play. Feedback is more than words. Whether explicitly through oral or written language, or implicitly in gestures or tone of voice, feedback conveys information about behaviours and offers an evaluation of the quality of those behaviours. In an online teaching situation non-verbal communication has changed and is more difficult to read.

It is well known that when used effectively during education and training, (online) peer feedback makes trainees do a better job. Trainees who give each other feedback are more active during the learning and training process, keep on track, remain goal-oriented, compare the work of other trainees with their own work and reflect on how their own work can be improved. Using peer feedback alone is not enough. Here are some guidelines that can help trainers to use peer feedback effectively.

Receiving feedback effectively:

- **Listen to the feedback given**. This means not interrupting. Hear the person out, and listen to what he or she is really saying, not what you assume he or she will say. You can absorb more information if you are concentrating on listening and understanding rather than being defensive and focusing on your response;
- **Be aware of your responses.** Your body language and tone of voice often speak louder than words;
- **Try to avoid putting up barriers**. If you look distracted and bored, that sends a negative message as well. Attentiveness, on the other hand, indicates that you value what someone has to say and puts both of you at ease;
- **Be open.** This means being receptive to new ideas and different opinions. Often, there is more than one way of doing something and others may have a completely different viewpoint on a given topic. You may learn something worthwhile;
- **Understand the message.** Make sure you understand what is being said to you, especially before responding to the feedback;
- **Ask questions for clarification if necessary.** Listen actively by repeating key points so that you know you have interpreted the feedback correctly. In a group environment, ask for others' feedback before responding. In addition, when possible, be explicit as to what kind of feedback you are seeking beforehand so you are not taken by surprise;
- **Reflect and decide what to do.** Assess the value of the feedback, the consequences of using it or ignoring it, and then decide what to do because of it. Your response is your choice. If you disagree with the feedback, consider asking for a second opinion from someone else;
- **Follow up.** There are many ways to follow up on feedback. Sometimes your follow-up will simply involve implementing the suggestions given to you. In other situations, you might want to set up another meeting to discuss the feedback or to re-submit the revised work.

Giving effective feedback

- **Prioritise your ideas.** Limit your feedback to the most important issues. Consider the feedback's potential value to the receiver and how you would respond. Moreover, too much feedback provided at a single time can be overwhelming to the recipient;
- **Concentrate on the behaviour, not the person.** One strategy is to open by stating the behaviour in question, then describing how you feel about it, and ending with what you want. This model enables you to avoid sounding accusatory by using "I" and focusing on behaviours, instead of assumed interpretations. Example: *"I haven't seen you in class for a week. I'm worried that you are missing important information. Can we meet soon to discuss it?"* Instead of: *"You obviously don't care about this course!";*
- **Balance the content.** Use the "sandwich approach". Begin by providing comments on specific strengths. This provides reinforcement and identifies the things the recipient should keep doing. Then identify specific areas of improvement and ways to make changes. Conclude with a positive comment. For example: *"Your presentation was great. You made good eye contact, and were well prepared. You were a little hard to hear at the back of the room, but with some practice you can overcome this. Keep up the good work!"* Instead of: *"You didn't speak loudly enough. However, the presentation went well.";*

- **Be specific.** Avoid general comments that may be of limited use to the receiver. Try to include examples to illustrate your statement;
- **Be realistic.** Feedback should focus on what can be changed. Remember to avoid using the words "always" and "never". People's behaviour is rarely that consistent;
- **Be attentive.** Concentrate fully on what is being said. Focus on what the person wants you to know, not on what you would like to hear;
- **Own the feedback.** When offering evaluative comments, use the pronoun "I" rather than "they" or "one", which would imply that your opinion is universally agreed on. Remember that feedback is merely your opinion;
- **Be timely.** Seek an appropriate time to communicate your feedback. Feedback loses its impact if delayed too long. Delayed feedback can also cause feelings of guilt and resentment in the recipient if the opportunity for improvement has passed;
- **Be silent.** Refrain from making a response. Don't even begin to frame a response in your own mind until you have listened carefully to what has been said and have considered the implications. Don't be distracted by the need to explain: if you continue to feel that you need to give an explanation do it later after the feedback session once you are sure you have attended to all that has been said;
- **Offer continuing support.** Feedback should be a continuous process, not a one-time event. After offering feedback, make a conscious effort to follow up. Let recipients know you are available if they have questions and, if appropriate, ask for another opportunity to provide more feedback in the future, thus offering learning opportunities and self-reflection.

4.2.5 Designing and planning a training programme

The objective of this topic is to enable trainees to identify the factors that will have an impact on designing a training programme. The trainee instructor should introduce how to relate the learning outcomes of a specific programme to the specified competence.

Trainers are recommended to **demonstrate the differences between the competences and outcomes**. The trainees will be able to identify the key distinction between learning outcomes and competence. It is suggested that the competences included in the ES-QIN - Standards of competence and Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation should be provided to indicate the connection between competence and learning outcomes.

When designing a training programme for inland navigation, the trainee instructor should identify the specific competences required by Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation The learning outcomes are essential parameters to demonstrate these competences. The planned outcomes should be consistent with the identified competence from the ES-QIN - Standards of competence. The teaching contents should therefore cover all the knowledge listed in the ES-QIN - Standards of competence and also appropriate teaching aids should be selected accordingly to facilitate the trainees' competence building.

Next, trainees should be taught how to develop relevant learning outcomes. It is suggested that the basic principles and rules be introduced by trainers in the form of an in-class exercise that falls into the category of content, teaching strategies and assessment for a specified learning programme. It is better that trainers provide a lesson sample of learning outcomes development and conclude with some tips to assist the trainees to finish their work.

4.2.5.1 Recognise factors to be considered when designing a training programme

Rather than thinking about what trainers must give up, they can start thinking of everything they'll need to bring to the table to implement the best training programme for the needs of the trainees. The following 10 tips should be considered:

- **Identify what you are trying to achieve.** Understanding the target outcome will give trainers direction to their choices as they develop the training programme;
- **Determine who needs to participate in the learning and training sessions.** Are trainees operational or management level?;
- **Discuss and identify which topics are best suited to address the needs of the trainees**;
- **Decide what assessments** will give participants the feedback they need to make the most of their learning session;
- **Identify the length of time** participants can be available for each learning and training session;
- **Define how many learning and training sessions** are necessary to achieve the desired outcomes;
- **Determine the best approach** for the learning and training session (i.e., a live facilitated event or a virtual event);
- **Identify real-world opportunities** within the E&T institution that could be used to provide practical application within the learning session;
- **Determine the best plan of action** to use within the training to support immediate transfer and application of new skills and knowledge;
- **Identify plans and processes to sustain, strengthen and extend the learning and training process** beyond the walls of the classroom.

4.2.5.2 Orient teaching activities to context and trainee needs

The purpose of this topic is to provide trainers with the ability to recognise trainee differences and modify class delivery in order to help each trainee to reach his/her potential. Differentiated teaching focuses on helping each individual trainee to grow academically. Differentiation work such as respectful tasks, flexible grouping and ongoing assessment and adjustment is critical to modification. The heart of this orientation is that trainees can adapt one or more of the course elements based on the trainee characteristics at any point in a lesson or unit using a range of teaching and management strategies.

The purpose of this activity is to allow trainers to adjust the teaching methods to the actual situation. There are various teaching methods available now, such as explaining learning, demonstrating learning, communicating learning, task-based learning, interactive learning, e-learning, etc. However, the choice of teaching methods to be used depends largely on the content or the aptitude and enthusiasm of the instructor. Therefore, choosing the appropriate teaching methods that can maximise the effect of learning and training is essential.

This topic may best be carried out by simulated teaching and training, which focuses on selecting the appropriate teaching activities to meet the needs of effective teaching and training. Dealing with complex problem situations in classroom is actually a decision-making process for trainers who have to cover material through a series of practical exercises. Effective trainers must have a strong ability to sense the environment, which means the ability to be aware of what is happening in the classroom and/or online and to use the right activities in line with the real situation of classroom and/or online and trainees.

Written or oral forms of feedback and comments on the simulated teaching and training may be used to evaluate trainees. Assessment should consider how effectively the various teaching activities can promote interaction and communication between instructors and trainees.

4.2.5.3 Design and develop a blended training programme

When developing a training programme, there are a number of considerations. Training is something that should be planned and developed in advance.

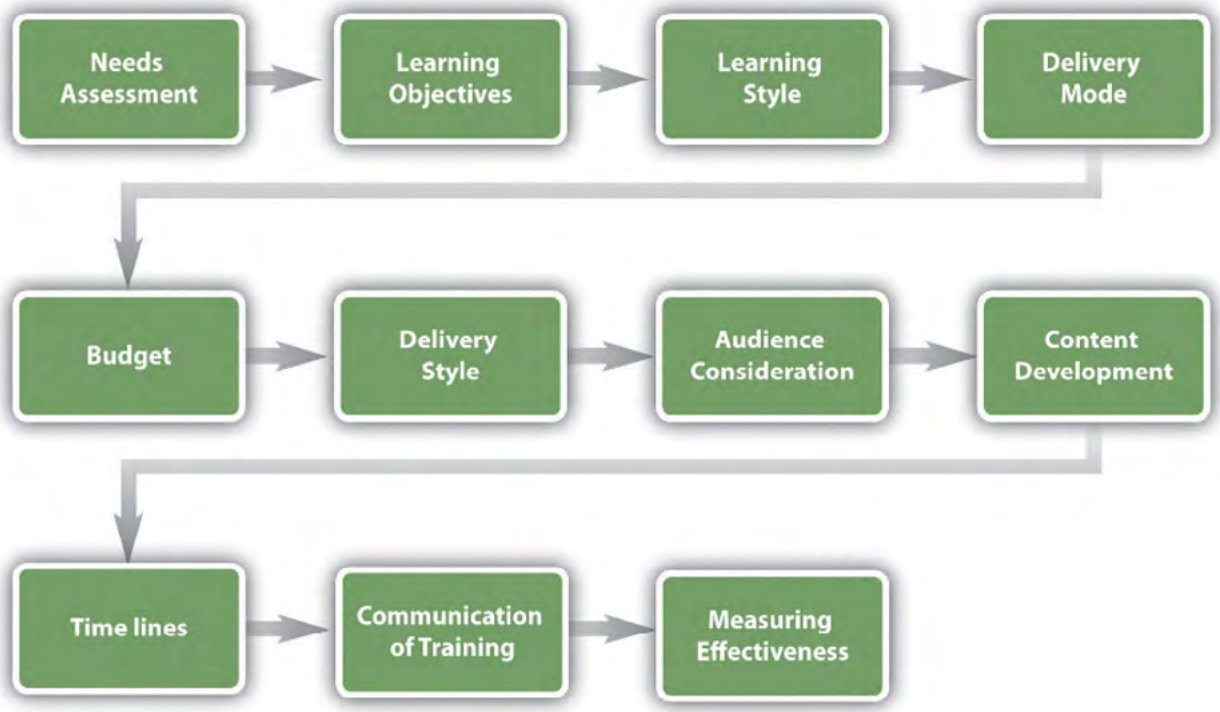

Figure 6. Training Programme Development Model
Source: https://open.lib.umn.edu/humanresourcemanagement/chapter/8-4-designing-a-training-program/

The considerations for developing a training programme are as follows:

- **Needs assessment and learning objectives**. Trainers should consider what kind of training is needed. Once they have determined the training needed, they can set learning objectives to measure at the end of the training. A learning objective is what the trainer wants the trainee to be able to do, explain or demonstrate at the end of the training period;
- **Consideration of learning styles**. Making sure to teach to accommodate a variety of learning styles is important to the development of training programmes. An effective instructor tries to develop training to meet the three different learning styles:
  - *Visual learner.* A visual learner usually has a clear "picture" of an experience. A visual learner often says things such as "I can see what you are saying" or "This looks good". A visual learner is best reached using graphics, pictures and figures.
  - *Auditory learner.* An auditory learner learns by sound. An auditory learner might say, "If I understand you correctly" or "What do you hear about this situation?". The auditory learner will learn by listening to a lecture or to someone explaining how to do something.
  - *Kinaesthetic learner.* A kinaesthetic learner learns by developing feelings toward an experience. These types of learners tend to learn by doing rather than listening or seeing someone else do it. This type of learner will often say things such as "This feels right";
- **Delivery mode**. Depending on the type of training that needs to be delivered, the instructor will likely choose a different mode to deliver the training. Before developing a training programme, instructors are advised to answer the following questions: *What is the best way to get their message across? Is web-based training more appropriate, or should mentoring be used? Can vestibule training be used for a portion of the training along with job shadowing?*
- **Budget.** How much money do you have to spend on this training? If the trainer decides that web-based training is the right delivery mode, but they don't have the budget to pay the user fee for the platform, this wouldn't be the best option.
- **Delivery method**. Taking into consideration the delivery method, trainers are advised to consider what the best style to deliver the training is: *Will the training be self-paced, instructor-led or both? What kinds of discussions and interactivity can be developed in conjunction with this training?*
  It's also important to keep in mind that most trainees don't learn through "PowerPoint" only; they learn in a variety of ways, such as auditory, kinaesthetic or visual. Considering this, the trainer is recommended to consider what kinds of ice breakers, breakout discussions and activities can be incorporated to make the training as interactive as possible. Role play and other games can make the training fun for trainees. Online videos, podcasts and other interactive media can be implemented in the training sessions. This ensures different learning styles are used and also makes the training more interesting.
- **Audience**. *Who will be part of this training? Will the instructor train a mix of roles, such as boatmen and boatmasters? What are the job responsibilities of these trainees and how can the instructor make the training relevant to their jobs?* Knowing the answers to these questions can help trainers develop a relevant delivery style that makes for better training;
- **Content**. The content the trainer wants to deliver is perhaps one of the most important elements of training and one of the most time-consuming to develop. Developing learning objectives the trainer wants the trainees to know after the instruction makes for a more focused training. Trainers are recommended to consider learning objectives as goals - what should someone know after completing the training: *What needs should be taught? How will the trainer sequence the information?* Development of content usually requires a development of learning objectives and then a brief outline of the major topics the trainer wants to cover. Based on this information, the trainer can develop modules or PowerPoint slides, activities, discussion questions and other learning techniques;
- **Timelines**. For some types of training, timelines may be required to ensure the training has been done. This is often the case for safety training; usually the training should be done before the crew member starts his/her job on board the vessel. In other words, *How long will it take to develop the training? Is there a deadline for training to be completed?* After the trainer has developed the training content, they will likely have a good idea as to how long it will take to deliver it. In this respect, trainers are advised to keep the training time realistic and concise;
- **Communication**. Once the trainer has developed the training programme, the next consideration is how he/she will communicate the available training to stakeholders: *How will participants know the training is available to them?;*
- **Measuring effectiveness of training**. After instructors have completed the training, they are recommended to make sure the training objectives were met. *How will the instructor know if the training delivered worked? What means will the instructor use to measure this? ;*
  One model to measure effectiveness of training is the Kirkpatrick model (Kirkpatrick, 2006), developed in the 1950s. His model has four levels:
  - Reaction: *How did the participants react to the training program?*
  - Learning: *To what extent did participants improve knowledge and skills?*

- Behaviour: Did behaviour change as a result of the training?
- Results: *What benefits to the organisation resulted from the training?*

The content of a course manual may consist of general information, user guide, general references, introduction, etc.

The course manual must be a useful transnational training tool for conducting the teaching and training sessions and is intended to assist education and training providers and their teaching staff in organising and introducing new education & training programmes, or in enhancing, updating and supplementing existing didactical materials with the ultimate end results of raising quality and effectiveness of the education & training programmes.

Technical content and levels of knowledge and abilities included in the course manual must be in line with the applicable Delegated Directive (EU) 2020/12 supplementing Directive (EU) 2017/2397 as regards the standards of competences and corresponding knowledge and skills, for the practical examinations, for the approval of simulators and for medical fitness, being an essential tool for Boatmaster/Boatman.

A template for the course manual structure is presented in Annex 6.

Figure 7. Kirkpatrick's Four Levels of Training Evaluation
Source: https://www.kirkpatrickpartners.com/the-kirkpatrick-model/

A number of course practical exercises and activities are developed for use for training purposes. They are sorted according to the course modules and examples can be seen in each course manual. These exercises and activities could be customised or prospective instructors may devise their own practical exercises for the purpose.

This practical training links the theoretical content of the lessons to their practical use. The trainee should deepen his/her knowledge in defined theoretical subjects by elaborating on a variety of facts and figures about the topic and present them in front of his/her trainees afterwards.

Possible solutions to theoretical and practical subjects can be discussed within (parts of) the learning group. Different views and opinions on a defined subject are exchanged and discussed by the participants in order to broaden the view of the individual on the problem and show different possible solutions and their respective advantages and disadvantages. A discussion should be stimulated or consolidated, if necessary, in order to secure that every participant actively participates.

For example, for Navigation course OL, in general, practical activities can be specified as follows:

- **(Simulator) exercises**. Practical exercises on board a (training) vessel or in an applicable IWT ship handling simulator can be undertaken in order to give the candidates the opportunity to deepen and enhance their theoretical knowledge into practical skills. This practical training links the theoretical content of the lessons to their practical use.
- **Case studies**. Theoretical subjects are elaborated by the candidates autonomously in case studies. The candidate should deepen his or her knowledge in defined theoretical subjects by elaborating on a variety of facts and figures about this topic and present them in front of his or her classmates afterwards.
- **Discussions and reflection, interactive learning**. Possible solutions to theoretical and practical subjects can be discussed within (parts of) the learning group. Different views and opinions on a defined subject are exchanged and discussed by the participants in order to broaden the view of the individual on this problem and show different perspectives.

4.2.5.4 Conduct a practical Training session

Training is the lifeblood of any E&T institution, but conducting an effective training session can be a challenge. A session that is unfocused, unorganised or boring can leave trainees feeling frustrated. Instructors are recommended to conduct an effective training session by setting clear and achievable goals and creating memorable activities to help trainees reach those goals.

Delivering a training session includes three major parts - what the trainer does before, during, and after the session.

Before the training session:

A lot of what the trainer does before the training happens in the weeks or even months before the training occurs. Even if instructors are using a pre-existing training outline, many of the same points will still apply. To recap very briefly, some of the key steps will include:

- **Carry out a training needs analysis**. Performing a training needs analysis will help trainers guide how they can structure their practical training session. This may include: planning and organising tasks and activities, motivation of trainees, communication skills, delegation of tasks, financial issues, managing inter-departmental relationships. The insights trainers gain from a training needs analysis will help them design e-learning courses as well, with relevant content that will help trainees perform well in their jobs on board inland navigation vessels;
- **Keep Adult Learning Principles in Mind**. When organising a practical training session trainers should take into account the adult learning principles:
  - *Self-Concept*: As a person matures they move towards becoming a self-directed human being;
  - *Adult Learner Experience*: As a person matures they accumulate a growing reservoir of experience that becomes an increasing resource for learning;
  - *Readiness to Learn*: As a person matures their readiness to learn becomes oriented increasingly to the developmental tasks of their social roles;
  - *Orientation to Learning*: As a person matures their perspective changes and they become more focused on solving problems;
  - *Motivation to Learn*: As a person matures the motivation to learn is internalised.
- **Establish the learning and training objectives**. Learning objectives are the basis of any training session. These will highlight the knowledge skills, abilities and competences that crew members will master by attending the session, but more importantly learning objectives should be derived from the needs assessment previously mentioned. Having clear goals maximises the potential and impact of the training session by setting expectations, motivating and making trainees aware of what they are working towards and seeking to develop.

Learning objectives must be measurable. When it comes to establishing measurable objectives, the SMART format of formulating learning objectives is a great way to create clear goals. SMART refers to:

Figure 8. SMART goals
Source: https://www.clicdata.com/blog/how-to-set-smart-goals-for-your-business/

- **Specific**: Goals for training must be specific and clear. When drafting the goal, trainers should answer the five "W" questions:
  - ***What*** *do I want to accomplish?*
  - ***Why*** *is this goal important?*
  - ***Who*** *is involved?*
  - ***Where*** *is the session located?*
  - ***Which*** *resources or limits are involved?*
- **Measurable**: Learning objectives need to be measurable so that the trainer can track his/her progress and stay motivated. A measurable goal should address questions such as:
  - *How much?*
  - *How many?*
  - *How will I know when it is accomplished?*
- **Achievable**: Learning objectives can be ambitious, but trainers should keep in mind that they must also be realistic and achievable. An achievable goal will usually answer questions such as:
  - *How can I accomplish this goal?*
  - *How realistic is the goal, based on other constraints, such as financial factors?*
- **Relevant**: Trainers should consider the implications for attendees and their roles on board inland navigation vessels. A relevant goal can answer "yes" to these questions:
  - *Does this seem worthwhile?*
  - *Is this the right time?*
  - *Does this match our other efforts/needs?*
  - *Am I the right person to reach this goal?*
  - *Is it applicable in the current inland navigation environment?*
- **Timed**: A goal without a deadline isn't feasible. In this case, trainers should consider both the time for the session as well as the time to implement the skills, abilities and competencies learned and formed in the workplace. A timed goal will usually answer the following questions:
  - *When?*
  - *What can I do two months from now?*
  - *What can I do two weeks from now?*
  - *What can I do today?*

During the training session

After the trainer did all the planning, took care of the preparation, determined the training needs, set goals, promoted the training schedule and prepared materials, space and people, the time to deliver the training has finally come. The trainer is recommended to consider some specific tips and techniques to help him/her run an effective training session that accomplishes the goals in an enjoyable and engaging way for everyone involved.

- **Tell trainees what you're going to cover**. Introduce your session with a brief overview of the training subject's main points;
- **Tell trainees the information**. In the main part of the session, explain key points, go over policies, demonstrate procedures and relate any other information trainees need to know;
- **Tell trainees what you told them**. Conclude with a summary of your opening overview. Use repetition to help trainees grasp and retain information;
- **Always explain what trainees are going to see before you show a multimedia session**. This practice creates a better learning environment by guiding trainees to know what to look for and what to remember. Explaining the purpose of the multimedia ensures an effective reception for its information;
- **Use as much hands-on training as possible**. The most effective training uses all the senses to affect learning. Demonstrate and apply teaching points to create greater understanding and knowledge of the subject;
- **Test frequently**. Tests are most effective when trainees know they will be quizzed, because they will pay close attention to the material. Testing is an objective way to determine whether training achieved its goals or not;
- **Involve trainees**. For example, ask participants to share their experiences with the training topic. Many trainees are experienced personnel who have valuable information to contribute. All trainees will get more out of sessions by hearing about their co-crew members' experiences with the subject - and not just the instructor's lecture points. Hearing different voices also keeps sessions varied and interesting. Structure interaction time into all your sessions;
- **Repeat questions before answering them**. This practice ensures that all participants know what the question is so they can make sense of the answer;
- **Analyse the session as you go**. Always be on the lookout for what works best. When you discover a new technique or method that clicks with the group, note it on your training materials so it can be incorporated into the training outline to be used in future sessions;
- **Keep your session on track**. Start on time and finish on time. Don't hold up class waiting for late trainees. Run the class according to the schedule and don't get too far off course. Opening up discussion among participants may lead to some pertinent tangents, but don't let side issues take over. Ask if there is enough interest to pursue a separate session on that topic, but get this class back to the lesson plan;
- **Put yourself in their shoes - or seats**. Give frequent breaks, especially for half-day or all-day sessions;
- **Request feedback on the training session**. Critiques work best when they are written and anonymous, unless a trainee volunteers to discuss his or her thoughts in person. Trainee input is vital for making the next session - and the overall training programme - more effective.

Trainers are encouraged to use these activities in their training session:

- **Lectures** are ideal for introducing a topic. Keep lectures to 30 minutes or less, and summarise the important points at the beginning and end. You may want to use a guest speaker if the topic is highly specialised;
- **Demonstrations** work best when you need to show the steps in a process or task. Trainees can try the task out for themselves, or you can demonstrate it in front of the group;
- **Discussions and debates** are useful after a lecture, because they allow trainees to ask questions about the concepts that they have just learned. Consider handing out a list of questions or topics to prompt a discussio;
- **Online learning** is helpful when trainees need to gain practical experience of inland navigation abilities and competencies, if they need to access video or audio material, or if quizzes and self-test activities will be useful;
- **Role play** involves trainees acting out a new ability in a simulated environment and learning from feedback from other participants;
- **Small group teaching** helps trainees clarify their understanding of the new information. They can explain it to one another in their own words and answer questions;
- **Case studies** help trainees put new information into context. As they process the information and relate it to a situation that's relevant to them, they create mental connections that will help them recall the information later.

Also, trainers are encouraged to use some softer training methods that are not necessarily essential to conveying information, but that can make receiving data or instructions a much more enjoyable experience and will keep trainees involved and help them retain more information.

- **Make learning fun**. Trainees will not be enthusiastic if training sessions are dry and dull. Few participants will respond to or remember complicated concepts or theories; don't forget that trainees are adults who want to learn practical information about what they can do to get better results. If they don't find the message entertaining, they won't retain it. Since variety is the spice of life, use several different training methods to engage trainees in a variety of ways. Also work to alternate the pace of each session to keep trainees' interest level high;
- **Use humour**. Humour helps keep enthusiasm at peak levels. Instructors can make a point more effective by using humour than by drowning trainees in statistics or theories. Avoid telling jokes, however, because humour is so subjective that someone in your audience may be offended and lose track of training for the rest of the session;
- **Use attractive packaging**. Use materials that are well-packaged and that communicate value. Professional packaging is a powerful tool for setting a good first impression;
- **Encourage participation**. Make the session lively by engaging participants in the training process. In fact, try to spend close to 80 percent of training time on group participation. Encourage everyone in the training session to speak freely, because learning occurs most readily when feelings are involved;
- **Build self-esteem**. Create a win-win environment by using the training programme to build the participants' self-worth and self-esteem.

After the training session

The learning and training process continues long after the training is over. The period just after the practical training session holds many opportunities that trainers can tap into to help trainees cement the material. Here's how:

- **Supplement the training with "social learning**". We all learn best when we have examples to follow, friends to share our successes with, buddies to learn from and mentors in our midst. Social learning connects trainees to one another and the trainers so that they can discuss and share stories. In-person meetings, chat groups, forums and videos of trainees sharing their stories hosted on the Intranet are effective ways to incorporate social learning in the learning and training process. This aspect increases motivation and facilitates a smooth transfer of the knowledge;
- **Provide refresher courses**. Trainees often report being unable to retain key learning points after the training is over or recall these concepts when needed. A refresher course can improve recall. The course should be simple and provide just a crisp and coherent summary of the key learning and training concepts. Trainers can pair these refresher programs with problem-solving sessions where trainees can help each other by recounting the challenges they have faced while trying to implement the learning and sharing stories of their success or troubleshooting tips;
- **Arrange post-training follow-up sessions**. Reflection is one of the most efficient ways to cement the knowledge, identify gaps in training and identify the barrier(s) to a strong transfer of learning. If possible, trainers can send follow-up emails to trainees after about a month to reinforce key learning points. Post-training follow-up sessions can be arranged to provide supplementary lessons or let trainees practice their skills and newly developed abilities or discuss their experiences as they try to apply their knowledge on the job.
  The answers to these questions provide valuable insights to trainers about how successful the learning transfer has been, so they can devise ways to optimise the transfer process.

Trainers are advised **NOT TO FORGET** that a successful training session depends on a handy last-minute checklist to make sure everything is ready for the training session:

- **Dress appropriately.** Use your audience analysis to figure out what to wear. In general, match your manner of dress to that of your trainees - or go slightly more professional;
- **Arrive early**. Give yourself time to check last-minute arrangements and get yourself mentally geared up for the session;
- **Check seating arrangements**. Make sure the set-up is ideal for the training style you want to use and have some extra chairs for any last-minute trainees;
- **Check room temperature**. Adjust it appropriately for the number of people who will be in the room and the size of the space you will all be occupying;
- **Check audio-visual hardware**. Conduct one last run-through to make sure everything is still running smoothly;
- **Check electrical outlets**. Make sure all your connections are safe. Don't trail cords across walkways or overload surge protector strips;
- **Check light switches**. Know which switches work which lights so you can achieve the ideal lighting for audio-visual materials and note-taking;
- **Check window-darkening equipment**. Make sure blinds or shades are working properly;
- **Check arrangements**. Make sure you have everything you need - including the training space for the entire time you need it;
- **Lay out classroom equipment**. If you will be demonstrating tools or equipment, make sure you have everything you need;
- **Lay out course materials**. Decide whether to put handouts on a table for trainees to pick up on the way in or to lay them at every seat.

These are all effective techniques for running a successful training session, but what kind of person does it take to do the training? The best trainers have several qualities that make them good at what they do:

- **Good communicators** speak well, express their thoughts clearly and have an engaging presentation style;
- **Knowledgeable**. Trainers must know their topic cold. They should understand all the concepts and know all the details. They must be able to answer questions thoroughly and at a level that trainees understand. If they ever can't answer a question, they must know exactly where to go to get that answer as soon as possible;
- **Experienced**. Trainers must know what they're talking about, as they've been in the field doing what they teach in training;
- **Good with trainees**. Trainers' personality styles may vary, but they must enjoy working with people. They should be able to engage groups of trainees and work with them to meet training goals;
- **Interested in learning**. Trainers should recognize the value of learning in their own lives and want to help others learn. A good trainer finds satisfaction in sharing with others the skills and knowledge they have acquired through hard work and persistence;
- **Patient**. Trainers must not forget that trainees learn in different ways and at different paces. They should take the time to make sure each trainee understands what's going on and leaves training sessions with the skills and knowledge he/she came to acquire;
- **Open-minded**. Trainers must respect other trainees' points of view and know that there are often many ways to achieve the same objectives. Good instructors will never assume they know everything, but instead are willing to listen to and learn from trainees;
- **Creative**. Trainers are recommended to bring ingenuity and their own natural curiosity to the task of training. They should create an environment in their training sessions that encourages learning and inspires trainees to reach beyond what they already know to explore new ideas and methods;
- **Well-prepared**. Valuable trainers know their material, their objectives and their plan of presentation. They've checked to see that any equipment they expect to use in training is in place and operational. They've made sure that all supplies and supporting materials are available in the right quantities;
- **Flexible**. Flexible trainers are able to adjust their training plan to accommodate their audience and still meet all training objectives;
- **Well-organised**. Good trainers can handle several tasks at once. They know how to manage their time and their work.

Handouts for additional study must be prepared and distributed if required. The person responsible for implementing the course should consider monitoring the quality of teaching in such areas as variety and form of approach, relationship with trainees and communicative and interactive skills; where necessary, this person should also provide appropriate counselling and support

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ANNEX 1A – THE TTT COURSE SCHEDULE (1)

Day 1, 09:00 – 17:00	
09:00 – 12:00	Welcome and introductions
	Participants self-introduction
	Introduction to the TTT course content and plan for the week
	Objectives of the training session
12:00 – 13:00	**Lunch**
13:00 – 15:00	Overview of Course Manual/Competency Tables/Short presentation of ES-QIN
	Review of pre-e-learning tasks/Testing the e-learning platform
15:00 - 17:00	Planning an effective learning environment
	• Factors which influence the teaching, learning and training process
	• Understanding competency-based learning
	• The learning process and training phases
	Practical activity: small lectures during the course to practice with lecturing, giving each other feedback, self-reflection on the given lecture and progress with lecturing
	Discussions and conclusions
Day 2, 09:00 – 17:00	
09:00 – 12:00	Theory - Innovative teaching and training methods and aids - familiarisation with the e-learning platform
	Innovative teaching and training methods and aids - theory
	Use the appropriate teaching and training methods and aids – practical activities
12:00 – 13:00	**Lunch**
15:00 - 17:00	Select and use the appropriate teaching and training methods and aids – group work and PPT presentations.
	Familiarisation with the e-learning platform for teaching and training methods and aids - continued
	Discussions and conclusions
Day 3, 09:00 – 17:00	
09:00 – 12:00	Evaluating teaching, learning and training
	• Theory - the purpose of evaluation
	• Theory and practice - Establishing an objective assessment
	• Types of evaluation/assessment – practical activities
	• Familiarisation with the e-learning platform for assessment and evaluation

12:00 - 13:00	**Lunch**
	Familiarisation with the e-learning platform for assessment and evaluation – continued
	How to use assessment results in blended learning and training
	Discussions and conclusions
Day 4, 09:00 - 17:00	
09:00 - 12:00	Review and day 4 plan
	Practical activities
	Designing and planning a blended training programme
	• Factors to be considered when designing a blended training programme
	• How to design and develop a blended training programme
	Familiarisation with the e-learning platform for case-studies and scenarios
12:00 - 13:00	**Lunch**
15:00 - 17:00	Using the e-learning platform for case-studies and scenarios – practical activities
	Conducting a practical Training session
	Discussions and conclusions
Day 5, 09:00 - 13:30	
09:00 - 11:00	Collective feedback and comments
	• Collective feedback (oral)
	• Individual feedback, written on request
	• Course evaluation questionnaire
	• Trainees' final comments
11:00 - 13:30	Close of the Training Session
	• Final evaluation of the training course by Course Coordinator
	• Next steps for trainers
	• Closing ceremony

ANNEX 1B – THE TTT BLENDED COURSE SCHEDULE (2)

Day 1 – online individual study	
Day 2 – online individual study	
Day 3, 09:00 – 17:00	
09:00 – 12:00	Welcome and introductions
	Participants self-introduction
	Introduction to the TTT course content and plan for the week
	Objectives of the blended training session
12:00 – 13:00	**Lunch**
13:00 – 15:00	Overview of Course Manual/Competency Tables/Short presentation of ES-QIN
	Review of pre e-learning tasks/Testing the e-learning platform
15:00 – 17:00	Using efficient and innovative teaching and training methods and aids
	Evaluating blended teaching, learning and training
	• The purpose of evaluation
	• Establishing an objective assessment
	• Evaluation/assessment in blended environment – practical activities
Day 4, 09:00 – 17:00	
09:00 – 12:00	Review and day 4 plan
	Practical activities
	Designing and planning a blended training programme
	• Factors to be considered when designing a blended training programme
	• How to design and develop a blended training programme
	• How to conduct a practical Training session
12:00 – 13:00	**Lunch**
15:00 – 17:00	Conducting practical Training sessions
	Discussions and conclusions
Day 5, 09:00 – 13:30	
09:00 – 11:00	Collective feedback and comments
	• Collective feedback (oral)
	• Individual feedback, written on request
	• Course evaluation questionnaire
	• Trainees' final comments
11:00 – 13:30	Close of the Training Session
	• Final evaluation of the training course by Course Coordinator
	• Next steps for trainers
	• Closing ceremony

ANNEX 2 – LESSON PLAN (MODEL)

Competence 1.1.1 Assist with mooring, unmooring and hauling (towage)operations;			
Learning Objective			
Learning outcomes			
Required equipment			
Lesson structure			
Learning activity	Didactical method (ABC method)	Materials	Time

ANNEX 3 – ACTIVITY TYPES. DESCRIPTION

Activity Type	Learning Activity	Description
Interaction with content Trainees are more likely to retain information presented in these ways if they are asked to interact with the material in some way.	**Drill and practice**	Problem/task is presented to trainees where they are asked to provide the answer; may be timed or untimed.
	Lecture	Convey concepts verbally, often with visual aids (e.g. presentation slides).
	Quiz	Exercise to assess the level of trainee understanding and questions can take many forms, e.g. multiple-choice, short-structured, essay, etc.
	Trainee presentation	Oral report where trainees share their research on a topic and take on a position and/or role.
Interaction with digital content Trainees experiment with decision making, and visualise the effects and/ or consequences in virtual environments.	**Game**	Goal-oriented exercise that encourages collaboration and/or competition within a controlled virtual environment
	Simulation	Replica or representation of a real-world phenomenon that enables relationships, contexts, and concepts to be studied.
Interaction with others Peer relationships, informal support structures, and instructor - trainee interactions/ relationships.	**Debate**	Verbal activity in which two or more differing viewpoints on a subject are presented and argued.
	Discussion	Formal/informal conversation on a given topic/question where the instructor facilitates trainee sharing of responses to the questions, and building upon those responses.
	Feedback	Information provided by the instructor and/or peer(s) regarding aspects of one's performance or understanding.
	Guest speaker	Feelings, thoughts, ideas and experiences specific to a given topic are shared by an invited presenter.
Problem solving and Critical thinking Presenting trainees with a problem, scenario, case study, challenge which they are then asked to address or deal with. Provides trainees with opportunities to think about or use knowledge and information in new and different ways.	**Case Study**	Detailed story (true or fictional) that students analyse in detail to identify the underlying principles, practices or lessons it contains.
	Concept Mapping	Graphical representation of related information in which common or shared concepts are linked together.
	Real-world projects	Planned set of interrelated tasks to be executed over a fixed period and within certain cost and other limitations, either individually or collaboratively.
Reflection The process of reflection starts with the trainees thinking about what they already know and have experienced in relation to the topic being explored/learnt. This is followed by analysis of why the trainee thinks about the topic in the way they do, and what assumptions, attitudes and beliefs they have about, and bring to learning about the topic.	**Reflection journal**	Written records of trainees' intellectual and emotional reactions to a given topic on a regular basis (e.g. weekly after each lesson).

ANNEX 4 – TABLE OF COMPETENCES COMPARED

No.	Essential Competence	Operational level *The boatmaster shall be able to:*	Management level *The boatmaster shall be able to:*
0	**Supervision**	-	0.1 instruct other deck crew members and supervise the tasks they perform, implying adequate abilities to perform these tasks.
1	**Navigation**	4.3 assist the management of the craft in situations of manoeuvring and handling a craft on inland waterways, on all types of waterways and all types of ports;	1.1 plan a journey and conduct navigation on inland waterways including being able to choose the most logical, economic and ecological sailing route to reach the loading and unloading destinations taking into account the applicable traffic regulations and agreed set of rules applicable in inland navigation; 1.2 apply knowledge of the applicable rules on the manning of craft, including knowledge on resting time and on the composition of the deck crew; 1.3 sail and manoeuvre ensuring the safe operation of the craft in all conditions on inland waterways, including in situations that involve high traffic density or where other craft carry dangerous goods and require basic knowledge of the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN); 1.4 respond to navigational emergencies on inland waterways.
2	**Operation of the craft**	2.1 assist the management of the craft in controlling the operation of the craft and in the care of persons on board; 2.2 use the equipment of the craft;	2.1 apply knowledge of inland waterway shipbuilding and construction methods to the operation of various types of craft and have basic knowledge of the technical requirements for inland waterway vessels, as referred to in Directive (EU) 2016/1629 of the European Parliament and of the Council; 2.2 control and monitor the mandatory equipment as mentioned in the applicable craft certificate.
3	**Cargo handling, stowage and passenger transport**	3.1 assist the management of the craft in the preparation, stowage and monitoring of cargo during loading and unloading operations; 3.2 assist the management of the craft in providing services to passengers and provide direct assistance to disabled persons and persons with reduced mobility in accordance with the training requirements and instructions of Annex IV to Regulation (EU) No 1177/2010 of the European Parliament and of the Council (1).	3.1 plan and ensure safe loading, stowage, securing, unloading and care of cargoes during the voyage; 3.2 plan and ensure the stability of the craft; 3.3 plan and ensure safe transport of and care for passengers during the voyage including providing direct assistance to disabled persons and persons with reduced mobility in accordance with the training requirements and instructions of Annex IV to Regulation (EU) No 1177/2010.

No.	Essential Competence	Operational level *The boatmaster shall be able to:*	Management level *The boatmaster shall be able to:*
4	**Marine engineering and electrical, electronic and control engineering**	4.1 assist the management of the craft in marine, electrical, electronic, and control engineering to ensure general technical safety; 4.2 perform maintenance work on marine, electrical, electronic, and control engineering equipment to ensure general technical safety.	4.1 plan the workflow of marine engineering and electrical, electronic and control engineering; 4.2 monitor the main engines and auxiliary machinery and equipment; 4.3 plan and give instructions in relation to the pump and the pump control system of the craft; 4.4 organise the safe use and application, maintenance and repair of the electro-technical devices of the craft; 4.5 control the safe maintenance and repair of technical devices.
5	**Maintenance and repair**	5.1 assist the management of the craft in maintaining and repairing craft, its devices and its equipment.	5.1 organise safe maintenance and repair of the craft and its equipment.
6	**Communication**	6.1 communicate generally and professionally, which includes the ability to use standardised communication phrases in situations with communication problems; 6.2 be sociable.	6.1 perform human resources management, be socially responsible, and take care of organisation of workflow and training on board the craft; 6.2 ensure good communication at all times, which includes the use of standardised communication phrases in situations with communication problems; 6.3 foster a well-balanced and sociable working environment on board.
7	**Health and safety and environmental protection**	7.1 adhere to safe working rules, understand the importance of health and safety rules and the importance of the environment; 7.2 acknowledge the importance of training aboard and act immediately in the event of emergencies; 7.3 take precautions to prevent fire and shall use the firefighting equipment correctly; 7.4 perform duties taking into account the importance of protecting the environment.	7.1 monitor the applicable legal requirements and take measures to ensure the safety of life; 7.2 maintain safety and security for persons on board including direct assistance to disabled persons and persons with reduced mobility in accordance with the training requirements and instructions of Annex IV to Regulation (EU) No 1177/2010; 7.3 set up emergency and damage control plans and handle emergency situations; 7.4 ensure compliance with requirements for environmental protection.

ANNEX 5 – COURSE MANUAL STRUCTURE TEMPLATE (EXAMPLE ON NAVIGATION - OL)

Foreword/preface

The content of this part of the Course Manual may consist of general information, user guide, general references, introduction, etc.

1. General information

The course curriculum already developed together with the responsible project partners should be included in this chapter.

1	**Aim**	**Provide training to assist in the implementation of Directive (EU) 2017/2397 on the recognition of professional qualifications in inland navigation and ES-QIN - Standards of competence – Navigation for crew members at the OL**
2	**Objective**	Provide training and practical guidance for trainees in order to be able to assist the management of the craft in situations of manoeuvring and handling a craft on inland waterways.
3	**Entry standards**	See Directive (EU) 2017/2397 - Annex 1.
4	**Course certificate**	On successful completion of the course, a document may be issued, stating that the holder graduated this learning module.
5	**Course intake limitation**	Admittance may be limited by the capacity of the educational infrastructure used for this learning module (i.e. in the simulation room max. 4 trainees, on board of the real/training craft 12 trainees etc.).
6	**Staff requirements**	The trainer should: • Be the holder of an appropriate "Train the Evaluator certificate"; • Be the holder of an appropriate "Train the Instructor certificate"; • Meet the requirements of Directive (EU) 2017/2397, Art. 18.
7	**Training facilities, equipment and teaching aids**	For the theoretical part of the course a classroom is required with video presentation equipment, teaching aids, etc. For the practical part of the course a real/training craft or full mission ship-handling simulators are mandatory.
8	**Learning outcomes**	*The boatman shall be able to assist the management of the craft in situations of manoeuvring and handling a craft on inland waterways. The boatman shall be able to do so on all types of waterways and all types of ports.* At the end of the training course, the trainee shall be able to: • Use required equipment on board for mooring, unmooring and hauling (towage) operations; • Connect/disconnect push/barge combinations using required equipment and materials; • Assist with anchor manoeuvres; • Steer the craft under supervision and comply with helm orders, taking into account the influence of wind and currents; • Consider relevant safety measures including the use of personal protective equipment; • Use navigational aids and instruments under supervision; • Undertake necessary actions for safety of navigation; • Describe the characteristics of main European inland waterways, ports and terminals for voyage preparation; • Respect the general provisions, signals, signs and marking system; • Follow procedures while passing locks and bridges; • Use system of traffic control.
9	**Assessment & evaluation**	Minimum requirements for assessment & evaluation of the trainees for graduation from the learning module (i.e. minimum score for theoretical evaluation, for practical evaluation, etc.) I.e. online training record book as a pathway for the course.

2.Instructor manual

This instructor manual provides guidance on the material that is to be presented during the Navigation course OL level, and has been arranged under the eleven Learning Outcomes (competences) identified in the course outline. The reference material indicated may be supplemented by additional texts or material at the discretion of the instructor.

The content of this chapter has to include at least the following sub chapters:

2.1 **Lesson plan**

2.2 **Background material** (bibliographical materials, reference documents and any other didactical materials which are presented in an annex of the Course Manual)

2.3 **Practical activities** (description of the EU legal requirements regarding the practical activities included in ES-QIN, Directive (EU) 2017/2397 and the optional CESNI standards as well. Practical scenarios should be included in another annex of the Course Manual)

2.4 **Classroom facilities and educational tools** (this information must be included in the course curriculum

2.5 **Examination & assessment** (instructors are recommended to refer to ES-QIN - Practical examination, on optional standards for practical examination of OL personnel, and to Directive (EU) 2017/2397)

3. **REGULATION AND CERTIFICATION** (reference to Directive (EU) 2017/2397, CESNI work on standards and European Training Record Book)

4. **LESSON MATERIALS** (this should include the content of the Course Manual based on the standards of competence)

5. **EFFECT OF THE HUMAN ELEMENT ON SUSTAINABLE SHIPPING** - (as this is a requirement from AF, developers are advised to refer to different factors that could affect the development of sustainability in shipping, from regulatory to socio-economic factors, market-related aspects to human factors)

6. **REFERENCE TO NQF, EQF, ECTS** (instructors and course developers are recommended to explain this topic as nowadays the European Union (EU) consists of 27 member states, and each state has a different education system)

7. **ANNEXES**

   Annex 1 - Bibliographical materials, reference documents, didactical materials

   Annex 2 - Practical scenarios

   Annex 3 - Examination format

ANNEX 6 – EXAMINATION FORMAT (EXAMPLE)

Standards for practical examination for obtaining a certificate of qualification as a boatmaster

For boatmasters, who have neither completed an approved training programme based on the standards of competence for the operational level nor passed an assessment of competence by an administrative authority aimed at verifying that the standards of competence for the operational level are met, the requirements are supplemented with the specific elements laid down in the standards set out in Section V (additional module on supervision in the context of the practical examination for obtaining a certificate of qualification as a boatmaster).

The examination comprises two parts: one on journey planning and a second one on journey execution. The assessment for the journey execution shall take place in a single session. Each part of the examination consists of several elements.

With respect to the content, the examination shall comply with the following requirements:

Journey planning

The part of the examination on journey planning comprises the elements listed in the table in Appendix 1. Elements are grouped in Categories I and II according to their importance. 10 elements from each category shall be selected from that list and tested in the examination.

Journey execution

Applicants are required to demonstrate that they are capable of executing a journey. An indispensable precondition for that is that applicants handle the craft themselves. The individual elements to be tested can be found in the table in Appendix 2 and – unlike the journey planning part – all of them shall always be tested.

Examiners are free to decide about the content of each individual examination element.

In each category, 10 elements shall be tested. The applicant can reach 10 points in each element as a maximum result.

For Category I, applicants must reach a minimum of 7 out of 10 points in each tested element. For category II, applicants must reach a minimum total score of 60 points (see Appendix 1 below)

Appendix 1

Content of the part of the examination on journey planning

No.	Competences	Examination elements	Category I-II
1.	1.1.1	Navigate on European inland waterways including locks and lifts according to navigation agreements with the agent;	I
2.	1.1.3	Consider economic and ecological aspects of the craft operation in order to use the craft efficiently and respect the environment;	II
3.	1.1.4	Take account of technical structures and profiles of the waterways, and take precautions;	I
4.	1.2.1	Ensure safe manning of craft in accordance with the applicable rules;	I
5.	1.3.3	Ensure safe access to the craft;	II
6.	2.1.1	Respect the principles of inland waterway shipbuilding and construction;	II
7.	2.1.2	Distinguish construction methods of craft and their behaviour in the water, especially in terms of stability and strength;	II
…	…	……	…

Appendix 2

Content of the part of the examination on journey execution

All elements listed in this part of the examination shall be tested. In each element, the applicant must reach a minimum of 7 out of a maximum of 10 points.

No.	Competences	Examination elements
1.	1.1.1	Navigate and manoeuvre the craft appropriate to the situation and in accordance with the statutory requirements of navigational law (as a function of current speed and direction, checking of depth of the water and loaded draught, under keel clearance, traffic density, interaction with other craft, etc.);
2.	1.1.4	Dock and cast off the inland waterway craft, in a right and proper manner and in compliance with statutory and/or safety-related requirements;
3.	1.1.5	Readjust or reset navigation aids if necessary;
4.	1.1.5	Gather all the information relevant for navigation supplied by the navigation aids and use it to adapt the handling of the craft;
5.	1.1.6	Turn on the necessary devices at the steering position (navigation aids such as Inland AIS, Inland ECDIS) and adjust them;
6.	2.2.2	Check that the craft is ready for the journey in accordance with the regulations, and that the cargo and other objects have been stowed safely in accordance with the regulations;
...	.....	.....

ANNEX 7 – COURSE AND INSTRUCTOR EVALUATION FORM (EXAMPLE 1)

COURSE ON:
VENUE AND DATE:
INSTRUCTOR(S):

RATING SCALE:

5 – Outstanding
4 - More than satisfactory
3 - Satisfactory
2 - Less than satisfactory
1 - Poor

Materials:	**1.** Printed materials were well organised, complete and readable (well printed).	5	4	3	2	1	N/A
	2. Online materials were well organised and complete	5	4	3	2	1	N/A
	3. Visual materials were related to course.	5	4	3	2	1	N/A
	4. Visual materials were in appropriate numbers	5	4	3	2	1	N/A
	5. Visual materials were of good quality.	5	4	3	2	1	N/A
Course:	**6.** Covered subjects that you thought it would.	5	4	3	2	1	N/A
	7. Was a reasonable length	5	4	3	2	1	N/A
	8. Contributed to your knowledge and skills.	5	4	3	2	1	N/A
	9. Related to your needs.	5	4	3	2	1	N/A
	10. Was worth recommending to others.	5	4	3	2	1	N/A
Practical session(s)/ activities	**11.** Covered scenarios related to your needs.	5	4	3	2	1	N/A
	12. Scenarios were well organised and complete	5	4	3	2	1	N/A
	13. Use of practical session time was:	5	4	3	2	1	N/A
	14. Contributed to your skills and competences	5	4	3	2	1	N/A
	15. Equipment was well organised, used and operational	5	4	3	2	1	N/A
	16. Was worth recommending to others	5	4	3	2	1	
Instructor(s)	**17.** Related course materials to class needs	5	4	3	2	1	N/A
	18. Knew subject thoroughly	5	4	3	2	1	N/A
	19. Quality of questions or problems raised by the instructor was	5	4	3	2	1	N/A
	20. Encouragement given to trainees to express themselves was	5	4	3	2	1	N/A
	21. Made course requirements and objectives clear	5	4	3	2	1	N/A
	22. Use of class time was:	5	4	3	2	1	N/A
	23. Contribution to the course was	5	4	3	2	1	N/A
	24. Availability of extra help when needed was:	5	4	3	2	1	N/A
	25. Tolerated differences of opinion	5	4	3	2	1	N/A
	26. Grading techniques were:	5	4	3	2	1	N/A
Suggestions	**27.** How could the instructors(s) improve class delivery?						
	28. How could the instructors(s) improve practical activities delivery?						
	29. How could the course content or structure be improved?						
	30. If you could make one change to this course (or school) what would you add, subtract, or delete?						

We greatly appreciate your time in completing this evaluation questionnaire.
Thank you

ANNEX 8 – COURSE AND INSTRUCTOR EVALUATION FORM (EXAMPLE 2)

Trainee course evaluation form

COURSE:
INSTRUCTOR/TRAINER:
DATE:

Please put a check by the response that represents your opinion

Teaching approaches	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The instructor stimulated my interest in the subject.					
2. The instructor managed classroom time and pace well.					
3. The instructor was organised and prepared for every class.					
4. The instructor encouraged discussions and responded to questions.					
5. The instructor demonstrated in-depth knowledge of the subject.					
6. The instructor appeared enthusiastic and interested.					
7. The instructor used a variety of instructional methods to reach the course objectives (e.g. group discussions, trainee presentations, etc.)					
8. The instructor challenged trainees to do their best work.					
9. The instructor used a variety of instructional aids to reach the course objectives (SMART board, tools, installations, e-learning platform, etc).					
10. The instructor used balanced tests to measure trainees' knowledge and skills acquired.					

Comments (Teaching Approaches)

Feedback and assessment	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
11. Information about the assessment was communicated clearly.					
12. Feedback was provided within the stated timeframe.					
13. Feedback showed how to improve my work (e.g. corrections including comments).					

Comments (Feedback and Assessment)

Resources and administration	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
14. The course was supported by adequate resources.					
15. Classroom resources for the course were useful.					
16. Instructor gave guidance on where to find resources.					

Comments (Resources and Administration)

Additional questions	Yes	No
17. The syllabus was explained at the beginning of the course.		
18. The course was delivered as outlined in the syllabus.		
19. Instructor explained the grading criteria of the course.		
20. Exams related to the course learning outcomes.		
21. Projects/ assignments related to the course learning outcomes.		
22. Would you recommend this course to a fellow student?		

Comments (Additional Questions)

Student self evaluation Please comment on your own work for this course.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
23. I contributed constructively during in-class activities.					
24. I feel I am achieving the learning outcomes.					

Comments (Student Self Evaluation)

Comments on strengths and ways of improvement
25. What changes would you recommend to improve this course?

26. What did you like best about your instructor's teaching?

27. What did you like least about your instructor's teaching?

28. Any further, constructive comment:

THANK YOU FOR YOUR TIME AND FOR YOUR VALUABLE FEEDBACK

ANNEX 9 – TRAINEE EVALUATION FORM

Teaching approaches	Poor	Fair	Good	Excellent	Outstanding
1. A good user of the computer, Internet, simulator and other teaching aids					
2. Accomplishes work on time					
3. Creative at work					
4. Demonstrates a sense of initiative					
5. Extends help to co-trainees					
6. Follows orders received correctly					
7. Good appearance					
8. Keeps training place clean and in proper order					
9. Manages time appropriately					
10. Patient and tolerant in handling any task					
11. Accomplishes tasks during required times					
12. Punctual in coming to the training class					
13. Responds positively to trainer's feedback					
14. Self-reliant and performs tasks with minimum supervision					
15. Shows interest in performing more advanced activities					
16. Volunteers to do routine work					
17. Works with the group harmoniously					

COMMENTS:

COMPETING

Co-funded by the Erasmus+ Programme of the European Union