



# METHODOLOGY

## PROJECT:

TO GUIDE EXPERTS AND TRAINERS TO ADAPT  
LEARNING CONTENT IN A DIGITAL  
ENVIRONMENT

*Enhancing the access to open educational  
resources (OERs) and greening the curricula*



*HoReCa Zero Waste: Enhancing the access to  
OERs and greening the curricula*

*2021-1-BG01-KA220-VET-000033346*

## Key Activity 2:

*Cooperation between organizations and  
institutions. Partnerships for cooperation in the  
field of vocational education and training.*

*The project implementation period is 24 months -  
from 01.11.2021 to 01.11.2023.*



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## INTRODUCTION

The HoReCa Zero Waste project aims to assist adult educators in acquiring the necessary competencies to teach skills to adult employees, chefs, bartenders, and servers in the restaurant industry to promote their employability, educational, and professional development and to ensure the sustainable development of the sector.

The aim of the project is achieved by applying a comprehensive and innovative approach that focuses on innovation (e.g. flexible pedagogies to adapt educational content in a digital environment and integrate it with the new educational content, application of technologically advanced e-learning), but also on other supporting elements such as videos demonstrating best practices in the sector, focus on current trends, cooperative approaches, etc.

## RESULTS

**The main results of the project are:**

1. Training program for cooks, bartenders and waiters. (Activity 1: Overview of existing training programs and methodology for adapting educational content in a digital environment)
2. Educational materials and innovative tools for providing training to adult employees in the HoReCa sector. (Activity 2: Creating open educational resources – reducing food waste)
3. Electronic platform for developing and accessing educational content. (Activity 3: Create an ICT-based e-learning platform to deliver learning content and activities for trainers and adult learners.) The developed platform (Activity 3) provides access to the training program (Activity 1) and the educational kit (Activity 2)

According to the planned schedule, the related activities are as follows:

- Functionalities of the e-learning platform
- Content and eLearning tools
- Guidelines for users
- Training and testing of educational resources in the e-learning platform



This document is designed to assist partners in developing and testing training content and integrating it into an electronic platform. The document provides methodology and tools useful for carrying out the activities.

**Project partners contributed their expertise to achieve the expected results.**

The methodology is aimed at quality assurance, which will be evaluated through functionality testing to establish the stability and security of the delivered system. During the testing phase of the platform, minor features may be added based on feedback from the results.

**ACTIVITY 1 OVERVIEW OF EXISTING TRAINING PROGRAMS AND METHODOLOGY FOR ADAPTATION OF EDUCATIONAL CONTENT IN A DIGITAL ENVIRONMENT**

A primary study which will include a review of existing training programs for the cook and waiter professions. The output of this first phase will be used to create educational content to be adapted for the digital environment and integrated with the new waste management training content.

Part of the project envisages the creation and presentation of educational content thematically aimed at preventing food waste and its adaptation in a digital environment - an online platform created under the project.

For cooks and waiters, up-to-date educational content on food waste management will be created, combining traditional teaching with a range of online learning tools.

Within the framework of the activity, a methodology will be developed to guide experts and trainers to adapt the educational content in a digital environment. The aim of this document is to outline the main steps to be followed in adapting training content and to provide examples of topics in the field of food waste management.

**The activity will be implemented in two stages as follows:**

1. Overview of the training programs for the professions of cook and waiter. The content of the two professions, subjects studied, the possibility of introducing a new module allowing the study of the challenges of reducing food waste will be reviewed.
2. Development of a methodology for adapting educational content in a digital environment and integrating it with new educational content related to waste management. The document is a resource for experts and trainers and has the following purpose:



- provides specific guidelines for adapting educational content to digital;
- presents examples of topics in the field of food waste management;
- describes the main characteristics of the online platform and the possibilities it offers;
- Examines the specifics of online learning at each stage of its provision.

The methodology will focus on the need to enrich the educational content, but above all on the need to improve the quality of education by introducing modern educational technologies and methods into the educational process.

### Type of result

- Research and training programs for cooks and waiters
- Methodology for guiding experts and trainers to adapt the learning content in a digital environment

## ACTIVITY 2. CREATION OF OPEN EDUCATIONAL RESOURCES

The main activities in this second phase of the project are the development of a curriculum with a thematic plan for the training of cooks and waiters with an emphasis on the prevention of food waste, and the preparation of a set of sample lessons presented in an interactive way to be used in the curriculum process. Open educational resources will be developed in several basic formats.

Based on the research done by the partners, educational content for food waste management in the cook and waiter professions will be developed. Written content will consist of:

### GUIDELINES FOR TRAINERS

Guidelines for trainers, including guidelines for using the online platform and information about the content created. It will serve as a mechanism for proper implementation and distribution of educational materials and will follow the basic steps that can guide trainers in their daily work.

### GUIDELINES FOR LEARNERS

Guidelines for learners - to guide and support them in the process of professional training. Important objectives of the guidelines are:



- to provide the learner with appropriate information about the learning objectives, the studied subjects and the expected learning outcomes;
- assists the intern in the process of professional training;
- to contribute to the successful completion of training by using the opportunities offered by the platform.

### ACTIVITY 3. DEVELOPMENT OF A PLATFORM FOR ADAPTATION OF EDUCATIONAL CONTENT IN A DIGITAL ENVIRONMENT

The learning and teaching processes are related to the learning tools and systems used in the learning process. Distance learning (DL) is a method of learning in which the learner is physically separated from the trainer. Distance learning includes:

- Electronic learning (E-Learning) – a form of learning through the Internet, network or computer. Provided via electronic media;
- Computer-based learning (Computer-based learning) - a form of learning organized and managed with the help of a computer. Provided via the Internet or via installation software;
- Web-based learning – a form of learning that is delivered via the Internet.

E-learning provides faster learning at a reduced cost, increased access to learning and clear accountability for all participants in the learning process. Another advantage of e-learning is that the trainer and the learner change positions. The trainer turns from an active party into a mediator who facilitates the process of assimilation of information and the formation of skills and competences, and the learner takes the active position.

The e-learning content management platform will be made available to access the content and through a website consisting of:



1.Module for trainers and mentors, including:

1.Information and status section - create a profile with personal and professional data, with the appropriate level of access

1.Subscription to modules and the ability to upload study materials

1.Test and exercise tool - every trainer will have access to publish and grade tests and exercises

1.Ability to send messages and communicate with participants

1.Module for learners, with the following capabilities:

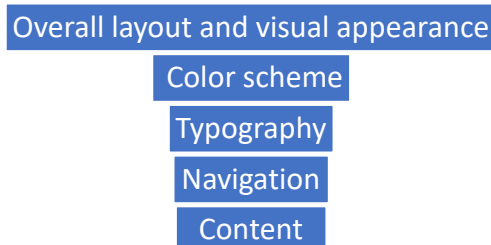
1.Information and status section - create a profile with personal and professional data, with the appropriate level of access

1.Access to learning content and learning schedule

1.Access to exercises and tests to check knowledge

1.Ability to send messages and communicate with participants

The design and interface of the learner toolkit will include several key elements such as:



The functional and technical characteristics should be described in a document.

## BASIC CONCEPTS AND CHARACTERISTICS

### DISTANCE LEARNING DEFINITIONS

The learning and teaching processes are related to the learning tools and systems used in the learning process. Distance learning (DL) is a method of learning in which the learner is physically separated from the trainer. Distance learning includes:

- Electronic learning (E-Learning) – a form of learning through the Internet, network or computer. Provided via electronic media;



- Computer-based learning - a form of learning organized and managed with the help of a computer. Provided via the Internet or via installation software;
- Web-based learning - a form of learning that is delivered via the Internet.

#### CHARACTERISTICS OF DISTANCE LEARNING:

- Separation in terms of time and place of the trainers and the learner almost throughout the ED process, in contrast to traditional training (face-to-face instruction);
- Participation of an educational organization in the process of planning and preparation of training materials, as well as in the provision of services supporting the learner. This distinguishes PE from tutoring and traditional teach-yourself programs;
- Use of technical means (print, audio, video or computer) to establish a connection between the trainers and the learner and to present the learning content;
- The provision of a two-way connection, from which the learner can benefit from a dialogue with the trainer (this distinguishes DO from other ways of using technology in education);
- Possibility of individual training, without formed groups of learners in the training process, with the possibility of holding planned meetings with didactic and socializing purposes.

#### TECHNOLOGIES USED

Technologies used in distance learning are divided into two groups: synchronous and asynchronous. Synchronous technologies are in an online delivery mode where all participants are online at the same time. Asynchronous technologies are in an online delivery mode where participants use the course materials on their own schedule. Learners are not required to be online at the same time.

Synchronous technologies:	Asynchronous technologies:
Phone	Printed materials
Video conferences	Email
Web conferencing	Audio and Video
Screen management	Forums



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## BASIC CONCEPTS IN E-LEARNING DEVELOPMENT

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### VIRTUAL LEARNING ENVIRONMENT (VLE)

A VLE is a software system designed to make it easier for educators to manage learning courses. Often the system tracks learner progress, with data available to both trainers and learners. System components often include web page templates, discussion forums, chat, test exercises. The latest items included in the VLE are blogs and RSS feeds where access to the services is controlled.

#### KEY FEATURES OF THE VIRTUAL LEARNING ENVIRONMENT:

- Modularity, reusable;
- Interactivity and variety of formats;
- Communication capabilities and accessibility.

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### TOOLS FOR DEVELOPING MULTIMEDIA CONTENT (AUTHORING TOOLS)

Multimedia content authoring tools are used to create reusable learning objects that are accessible from a repository through templates that incorporate instructional design principles.

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### LEARNING MANAGEMENT SYSTEM - LMS

A learning management system is a software package that enables the delivery and management of learning materials to large groups of learners. The systems are web-based to allow access anywhere, anytime.

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### LEARNING CONTENT MANAGEMENT SYSTEM-LCMS

The Learning Content Management System is an amalgamation of the multimedia content development tools and the Learning Management System through which these resources reach the end user.

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### RESOURCE-BASED LEARNING – RBL

Resource-based learning is an integrated set of strategies aimed at developing learner-centred learning in the context of wide accessibility, implemented through specially created learning materials (resources) and interactive (multimedia) technologies.



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## E-LEARNING DESIGN

The process of creating effective e-learning includes: design (Instructional Design) and development (Instructional Development) of e-learning. Design is a decision and development is an action. Design drives the decisions about what needs to be done, and development is how those decisions are implemented.

Instructional design is a process in which individual structural elements are organized. It involves selecting, organizing, and determining the need to teach someone something.

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In the process of implementing e-learning, it is necessary to have a preliminary analysis of the situation and the learners, a correct definition of the learning objectives, a choice of strategies and means of delivery. Specialists in the development of training products (Instructional Development) deal with these questions.

## LEARNING OBJECT - LO

A learning object is structured and reusable learning content created to achieve a specific learning goal, i.e. a learning object is any separate, completely independent resource (book, course or course). A digital learning object is an electronic resource with educational potential that can be stored, categorized, indexed and used repeatedly.

### THERE ARE TWO MAIN TYPES OF DIGITAL LEARNING OBJECTS:

- Content resources – can contain text, photographs, illustrations, animations, audio and videos and be included in the course website or other electronic learning materials.
- Resources with learning tasks - can be multiple choice tests, scenarios, games, exercises.

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## LEARNING PATH

The learning path is a certain sequence of learning activities carried out by the learner within a learning unit. The learning path can be set as:

- 
- A path with free movement of the learner through it, including all possible learning activities set by the trainer;



- A path with a static sequence of activities set by the trainer and a precisely defined placement of the activities for verification and/or evaluation, presented in a linear sequence;
- Pathway with compulsory and optional learning activities and compulsory activities for verification and/or assessment of knowledge and skills;
- An adaptive learning path/path tailored to individual learners' learning styles, entry level and learning achievements.

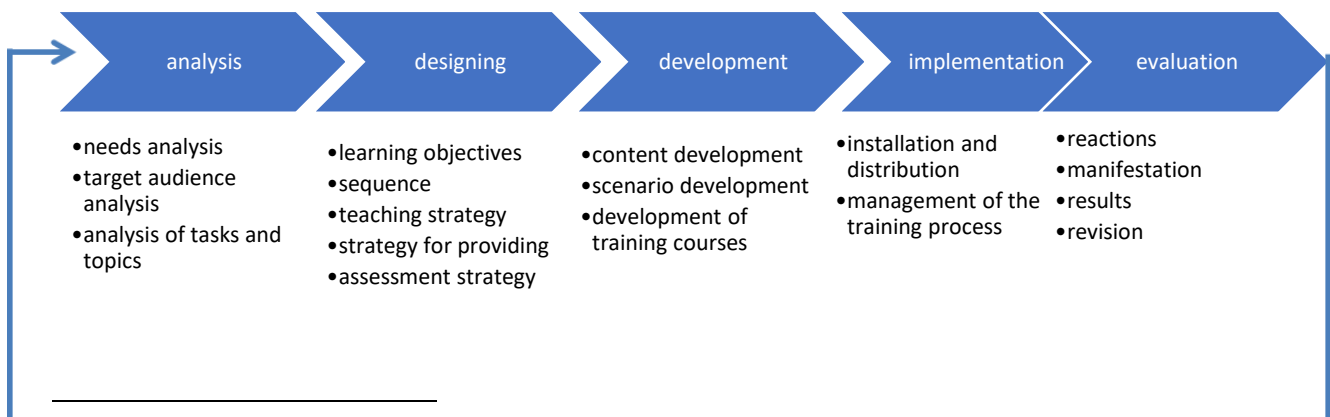
### MODELS FOR TRAINING DEVELOPMENT

The ADDIE model (Analyse, Design, Develop, Implement, Evaluate) <sup>1</sup>

The effectiveness of e-learning depends not only on the quality and development of technology. The preliminary analysis of the situation and the learners, the correct definition of the training objectives, the choice of strategies and means of delivery, as well as the evaluation of the training results are of great importance. Instructional Development (ID) specialists deal with these questions.

The first theories and models emerged in the 1960s and are based on the understanding that the process of creating and implementing training goes through the following phases: Analysis, Design, Development, Evaluation and Revision.

The ADDIE model is a step-by-step description of the instructional design process. It is one of the theoretical models that describe the activities that make up educational design. The process of creating and implementing e-learning goes through 5 main phases.



<sup>1</sup> Learning Theories In Plain English PDF eBook (Vol 1. of 2)



### Features of the main phases in the process of creating e-learning:

1. Analysis - includes a preliminary study of training needs, determination of the reasons for their occurrence, creation of a profile of the target group of learners, determination of training goals;
2. Designing - includes specifying the learning goals and breaking them down into sub-goals and tasks achievable within one learning unit; creation of achievement measurement tools (tests); determining the interactions between the three main parties in the learning process – learner, trainer, learning content; the way of organization and delivery of the learning process and the technologies used;
3. Development - covers the creation of all the materials necessary for the training - both those intended for the learners and those for the trainer, according to the strategy established in the previous phase. During this phase, all audio, video and text materials are collected, prepared or created;
4. Implementation - includes the processes of installation and distribution of the created product as well as the management of the provided training;
5. Evaluation – covers the process of evaluating the quality of the created e-learning. The results of the assessment are used in the next learning cycle to improve its effectiveness and clear up problems that have arisen:
  - Revision is directly related to the evaluation process and includes any changes based on the data obtained from it. The development of e-learning is a continuous process in which, based on the information from the evaluation of the training, changes are initiated to improve its effectiveness.

## E-LEARNING DEVELOPMENT

E-learning consists of different elements, ranging from simple learning resources (e.g. documents and PPT presentations) to interactive content, simulations and job aids. This section will cover the 3 stages in the eLearning development process:

1. [Content development;](#)
2. [Development of scenarios;](#)
3. [Development of training courses.](#)



## E-LEARNING CONTENT DEVELOPMENT <sup>2</sup>

Content is the information that the learners should acquire. This information must be accurate and current. The source of information should be clearly indicated so that the learner is able to verify it. First, a small number of reliable and up-to-date sources of information are identified. Learners should be encouraged to seek additional information. The lesson should be self-contained and contain everything the learner needs to meet the learning objectives. The lesson should be more than presenting information because the information is probably already available in a book or on a website. It should be an active tool for learning, providing an opportunity for active participation of the learner. The purpose of the lesson is for the learner to achieve good learning outcomes, not to demonstrate the skills of the trainer.

For e-learning to be effective, the content must be prepared and presented according to the learning format. Different teaching techniques must be creatively applied to develop engaging and motivating e-content.



This point presents suggestions for subject matter experts (SMEs) on how to prepare and write e-learning content. The following topics will be covered:

- How can experts (SMEs) provide the necessary information and knowledge?
- How should experts (SMEs) develop e-learning content?

### ***How do subject matter experts (SMEs) contribute to the development of e-learning?***

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<sup>2</sup> E-learning methodologies and good practices, <http://www.fao.org/docrep/015/i2516e/i2516e.pdf>



It is likely that some of the material for a particular topic is already available. They can consist of:

- User manuals and technical documentation;
- Presentations, such as PowerPoint slide shows;
- Documented cases;
- Photographs, images, graphics, tables and other illustrative materials;
- Reference materials, for example, specialist dictionaries.

### ***Can existing materials be used?***

Existing documents and training materials cannot be automatically transformed into eLearning materials without making changes. E-learning differs from face-to-face learning and requires specific formats. For self-directed eLearning, materials must be carefully designed and must describe or visually present enough instructions for learners to learn independently. For example:

- A PowerPoint presentation developed for face-to-face training is not e-learning content because it does not include all the explanations and examples that the presenter presents in a traditional classroom;
- An article available online is not eLearning content because the way it is structured does not meet the specific learning objectives and because pages of moving text are not the best way to read online.

Adaptation of existing instructor-led learning materials to a web-based learning environment is required.

### ***How many pages of content should an e-tutorial have?***

There are no hard and fast rules for the amount of content, it depends on the level of complexity and the number of questions and interactions in the lesson. An e-lesson should not last more than 30 minutes, as the duration of the learning process. A 30-minute e-lesson that includes 30 screens (at 1 minute per screen) will require approximately 10-15 pages of content. The study course includes up to 15 lessons, each of which contains up to 15 study units and each of them up to 200 words, and the whole course must contain up to 100 study units.



A learning unit is conventionally called a learning object that can contain one or more screens, text, in the form of pages (web pages), multimedia components and others. Courses in e-learning are often divided into a number of small modules that the learner can access in any sequence. The first unit of study introduces the learner to the basic principles of user interface. This gives him the opportunity to gain experience in navigation before the course has even started.

Each course has an introductory study unit that contains a brief summary of the course, its objectives, a list of the titles of the lessons included in it, and a glossary of specialist terms. During the course the terms should be linked to the vocabulary. This enables the learner to refresh their memory of terms or facts without breaking the sequence of the course.

#### DEVELOPMENT OF A SCRIPT FOR AN INTERACTIVE LESSON

Interactive e-lessons are the most common method of delivering e-learning content. They allow the various techniques of the multimedia environment to be used.

This section provides specific guidance on how to develop interactive eLearning lesson scenarios by applying various instructional techniques and multimedia elements. The following topics will be covered:

1. Structuring scenarios;
2. Formulation of learning objectives;
3. Using the different techniques for presenting the content of the lesson;
4. Add examples;
5. Use of multimedia elements (text, graphics, audio, video, animations);
6. Development of practical tasks.







### What is a script?

The Instructional Development Specialist (ID) works on content provided by Subject Matter Experts (SMEs) to design each eLearning lesson. A lesson script is the document designed as a result of this activity. The term "screenplay" is borrowed from film production to describe the visual presentation of the various scenes in the film. In eLearning, the script describes, screen by screen, what will happen in the final eLearning. The script is not a finished product. This is an intermediate product that is then used to create the final interactive e-lesson. For each lesson, the eLearning Development Specialist:

- View content provided by the author;
- Chooses a learning technique (approach) suitable to present the relevant type of content (e.g. storytelling, scenario-based approach, etc.);
- Determines the sequence in the content of the lesson;
- Creates the script that specifies which elements will appear on each screen of the e-lesson - text, images and other media, interactive questions.

Below is an example screen of an e-tutorial to present a sequence of steps created with PowerPoint. Scripts can also be created with a word processing program.

## BIO-WASTE AND FOOD WASTE

Biodegradable waste is waste from:	<ul style="list-style-type: none"> <li>• gardens and parks</li> <li>• food and kitchen waste from households, catering establishments and commercial establishments</li> <li>• similar waste from food processing enterprises</li> </ul>	
Food waste can be:	<ul style="list-style-type: none"> <li>• raw or cooked foods</li> <li>• food items such as stale bread or potato peelings</li> <li>• non-food items such as banana peels and eggshells</li> </ul>	

The main part of the slide represents the visual elements (text and graphics) that will appear on the screen of the final e-lesson. You can also see the number of screens and the lesson title, as well as the specific step.

The 2008 Waste Framework Directive defines bio-waste as "biodegradable" waste from gardens and parks, food and kitchen waste from households, restaurants, catering establishments and commercial establishments, as well as similar waste from food processing plants.

They do not include agricultural or forestry residues, natural fertilizers, sewage sludge or other biodegradable waste such as natural textiles, paper or treated wood. Also not included are those by-products of food production that never become waste.

In the notes section, the Instructional Developer lists information about the interactions, animations, and audio effects associated with this screen.

## STRUCTURE OF AN INTERACTIVE ELECTRONIC LESSON



When creating an interactive e-lesson script, the learning development specialist reorganizes the content provided by the subject matter expert into a series of slides that will correspond to the screens of the final interactive lesson.

### Components of an e-lesson



### What is learning outcomes (LOs)?

One of the important tasks in training development is the determination of learning outcomes (Learning outcomes - Los), this is also the first step in the process of developing a training lesson. Formulating lesson objectives requires specifying precisely and clearly what the learner will be able to do after completing the lesson.

### Content presentation techniques

When creating scenarios for e-lessons, learning developers can choose from a variety of content presentation techniques, depending on the type of content and the chosen learning approach.

This section discusses the various content presentation techniques, including descriptions and guidelines for when and how to use each:

1. Storytelling;
2. Scenario-based approach;
3. Method of practical demonstration.

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## STORYTELLING

### What is storytelling?

Storytelling provides information through a story, a narrative that places content in a realistic context and illustrates the actions and decisions of one or more participants. Illustrations, photos or video clips can be used.

### When should storytelling be used?

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The "Storytelling" technique can be useful when you need to:

- provide specific knowledge for performing work;
- describe complex processes in which different actors perform different actions. A story can clarify who is doing what and help learners follow the flow of events;
- add a human dimension to the lesson as learners can follow the stories of real people;
- emphasizes the usefulness of knowledge because through storytelling it is possible to show how this knowledge can be integrated into a real situation.

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## SCENARIO-BASED APPROACH

### ***What is a scenario-based approach?***

The concept of "learning by doing" is a good example of effective learning and is gaining more and more popularity. In this approach, learning is as effective as possible because it can interpret real conditions and situations.

An example of learning by doing is scenario-based learning. Scenario-based learning is the pedagogical design of one or more learning scenarios. Scenarios are usually developed on the basis of real situations and reflect their variety and complexity.

Lessons using this approach are built around scenarios. Typically, a scenario is a challenge, a situation where learners are required to make decisions by choosing between different options. Learners are provided with all the information they need to make the right decisions. For each option, learners are provided with feedback to explain why their choice is correct or incorrect. Feedback can also show the consequences of their decisions.

For the educator, the scenario provides a meaningful context that can be used to more easily explain abstract concepts, principles, and procedures.

For the learner, the scenario presents learning as meaningful and useful. A good scenario reflects a case, problem or incident that is common in the workplace. The use of such scenarios is of particular importance and meaning in professional training. It usually involves an event that places the learner in a role or roles that will require them to deal with the situation or problem caused by the event. The roles are those that the learners are likely to play in real life. The learner must achieve certain objectives and will be assigned a number of tasks and activities to achieve these objectives.



### **When should the scenario-based approach be used?**

This approach allows learners to learn strategic principles by applying them to the specific situation and observing the consequences of their decisions. A scenario-based approach can be useful when you need to:

- Develop skills or solve problems;
- Learn strategic principles, not conceptual and factual knowledge;
- Develop an interactive exercise at the end of a conceptual unit, ie. as a hands-on lesson after a set of lessons that provide basic concepts and principles.

An example of a scenario-based approach used

What kind of waste are eggshells?

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Biodegradable waste	1	Food waste	2
Avoidable waste	3	Unavoidable waste	4

**Click on a number to select the correct answer!**

Check the acquired knowledge! Answer the following question: What kind of waste are eggshells?

## METHOD OF PRACTICAL DEMONSTRATION

### **What is a practical demonstration method?**

The hands-on demonstration method is used to teach procedures. First the procedure is demonstrated and then the learner is asked to practice the procedure by interacting with



the system. As a practical demonstration, you can use an animation (for example, a flash animation). This should be accompanied by a detailed verbal explanation, in the form of written text or audio commentary.

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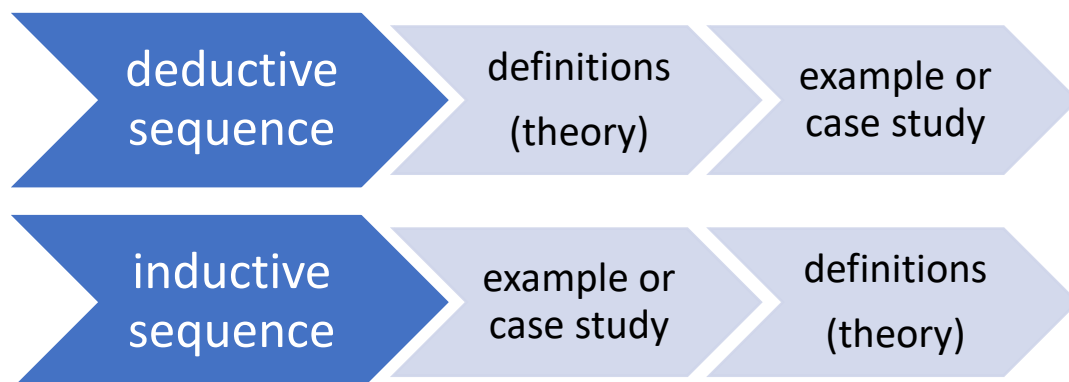
### ***When is the practical demonstration method used?***

This method can be used to teach procedures, usually software procedures. An operational simulation can be developed to enable learners to practice the procedure. Operational simulation allows learners to perform a range of actions (eg selecting options or entering text). If the learner acts incorrectly, the system gives an error message, and if the learner performs the correct action, the system allows to proceed to the next step, and so on until the end of the procedure.

### **ADD EXAMPLES**

Adding examples is key to ensuring that learners can understand the concepts depicted. Examples can help bridge the gap between theory and practice. Examples can be used in deductive and inductive sequences:

- Deductive sequence - to illustrate a concept or show the steps of a procedure that has been previously introduced;
- Inductive sequence - to stimulate thinking before providing definitions and principles. Deductive and inductive sequences



Deductive sequences reflect a behavioral approach that primarily emphasizes response, and inductive sequences reflect a constructive approach where the emphasis is on the active processes that learners use to construct new knowledge.



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## INTEGRATION OF MEDIA ELEMENTS

There are different types of multimedia elements that can be combined to create compelling e-lessons. Take special care when integrating multimedia elements into your script to avoid overloading learners, as this can be detrimental to the learning process.

### TEXT

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Written text is an important media element for describing course content. Special attention should be paid to the integration with images.

When presenting text on the screen, good readability and clarity should be ensured by using tables, or bulleted lists, or numbering, or blank spaces for individual items in a list. It is good practice to use graphic conventions (consistency), for example italic style should always be used for the same purpose.

### GRAPHICS

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Graphics include illustrations, photos, charts, and icons. They can be photographically realistic images or a schematic representation. Graphics that have no real function of supplementing the information in your text should be avoided. Decorative graphics do not help learners understand the text and should be kept to a minimum. The addition of extraneous photos may hinder the process of understanding the presented materials.

Graphics can serve a variety of communication functions, including the following:

- Decorative; Representative; Mnemonic; Organizational;
- Relational; (e.g. pie charts, line charts);
- Transformational (changes in objects in time or space - usually implemented through animations and video);
- Interpretive: (illustrates a theory, principle or causal relationships).

Graphics can play a crucial role in learning. They should not be used just to add visual interest to the screen. In e-learning, relevant graphics can facilitate learning by:

- Drawing attention to a specific element of the content;
- Analogies between new content and familiar knowledge;
- Improving the understanding of concepts;



- Simulating the work environment and real situations;
- Motivating learners.

## ANIMATIONS

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An animated illustration can show a series of procedural steps or transformations.

When using animations, it is important that learners focus on only one object at a time, for example, using arrows to direct attention to selected details or the direction of movement.

## SOUND ELEMENTS

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The use of sound elements significantly increases the effectiveness of the course.

Audio can be used in combination with on-screen text to summarize key points or accompany video clips. Audio narration is more effective than printed text when providing commentary over animations, video sequences, or a series of static slides showing a transformation.

## VIDEO ELEMENTS

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Video is the only medium that makes it possible to reproduce behavior, processes or procedures as they occur in real life. In many cases, however, graphics or animation can be more effective.

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## ADDITIONAL RESOURCES AND COPYRIGHT

### ADDITIONAL RESOURCES

Additional resources, such as sources of information or additional instruction, can be designed as part of the lesson or provided additionally. These resources may include:

- Printed versions of lesson content;
- "Getting started" type lessons, with an overview of the navigation functions, for new learners;



- Glossary of key terms and related explanations;
- Bibliography and/or links to web resources for additional information on the topic;
- Link to additional screens or help information.

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## COPYRIGHT

The educational content must be developed with copyright in mind, and when reproducing foreign materials, the relevant sources must be cited.

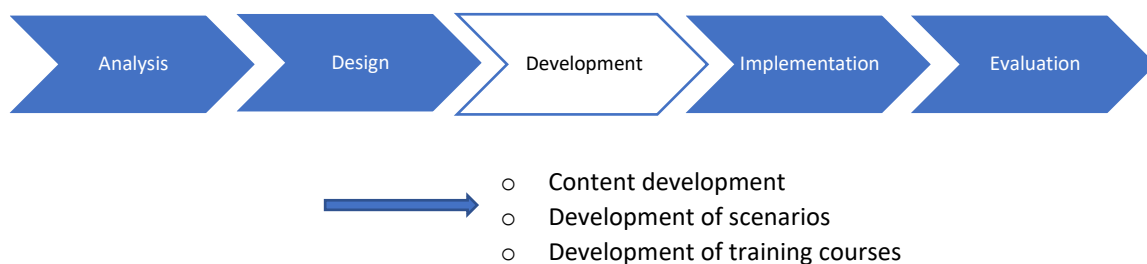
When reproducing images (figures, photos, etc.) they are usually not exactly what is needed to achieve the learning objectives or are too complex. Complex schemes, without adequate explanation, are confusing and do not contribute to the process of learning content.

Although it is tempting to copy an image created by the author of the eLearning it can better show what is being taught. You can create an image using the drawing tools in MS PowerPoint.

If there are existing images that are just what is needed to achieve a particular learning objective, permission must be obtained from the author or publisher to use them in eLearning.

## DEVELOPMENT OF TRAINING COURSES

This point provides information on the final step of the development phase, which is the creation of the final interactive training course. Tools for producing training courses in e-learning are reviewed.





Once the scenarios are ready, the creation of the final interactive e-lessons begins. Authoring tools are used to create multimedia content

A variety of tools can be used to produce eLearning content. In a broad sense and at the lowest level, even slide-based tools such as Microsoft PowerPoint can be considered e-learning production tools and can be sufficient for creating learning resources.

In the process of developing interactive content, different elements (e.g. text, illustrations, animations, audio, video, interactivity) are put together. Special tools known as authoring tools are used, created specifically for the development of e-learning courses.

Multimedia content authoring tools are used to create reusable learning objects that are accessible from a repository. They automate the development of a training course with templates that incorporate instructional design principles. Using these templates, authors can develop a complete course from only existing learning objects in the repository, create new learning objects, or use a combination of new and existing learning objects.

Multimedia content development tools enable the creation of multimedia content using an easy-to-use interface. Content can easily be customized for different purposes, reused, shared, merged with other content, and automatically processed, published, and delivered.

Authors can be experts in the relevant field, training designers, multimedia content authors, etc. The tool can also be used to quickly convert existing content, typically by adding multimedia, user interfaces, and methodologies.

**Multimedia content development tools have some key capabilities, including:**

- Interactivity and navigation – a menu for viewing the content and the ability to move through the entire content;
- Editing the content, in order to change or update;
- Visual presentation - use of buttons, icons, sliders;
- Integration with leading e-learning applications;
- Providing the learning content in different formats – for example, SCORM.

**Most interface types allow the following navigation techniques:**

- Course and lesson menus that allow learners to select a topic within the course and a specific lesson;
- Previous, next and home screen buttons to allow pace control within a lesson.



**Application 1 (Apl. 1.): Template for developing an e-learning course**

**Application 2 (Apl. 2.): Template for developing a task, exercise or other**

## DEVELOPMENT OF A QUESTIONNAIRE TO CHECK THE ACQUIRED KNOWLEDGE AND SKILLS

Development of a questionnaire (electronic test) to assess the acquired knowledge after passing electronic training for cooks and waiters.

These guidelines aim to present a vision for the preparation of such a knowledge and skills assessment tool that meets all these conditions.

One of the tasks of training is to verify and evaluate the knowledge, skills and behaviors acquired by learners. Didactic tests are very often used as a means of measuring the achievements of learners in mastering certain learning content. The tests establish:

- the individual status of the tested individual compared to the achievements of other learners (normative tests);
- the level of achievement of goals and tasks in relation to the relevant stage of assimilation of knowledge and skills (criterion tests).

A test is a sequence of questions in a specific area. The classic classification of test questions is according to the expected answer:

- tasks with a structured answer (closed type) – a correct answer is chosen from a limited set of alternatives;
- tasks with a free answer (open type) - the learners build their own answer.

Through closed-type tasks, the learner operates with a fully defined structured situation; the assessment is maximally objective; learning content can be fully covered and alignment with measurement objectives can be achieved. The check is relatively quick, which is why it is preferred by trainers, and most often they develop such tests themselves.

Tests, to be an effective form of assessment, must be standardized, accompanied by evidence that they actually measure the achievement for which they are intended. This implies that they possess certain qualities: objectivity regarding the preparation, the conduct of the test and the analysis of the results; reliability; validity.

## OBJECTIVES OF THE KNOWLEDGE AND SKILLS VERIFICATION QUESTIONNAIRE



The main purpose of the questionnaire (electronic test) is to evaluate the acquired knowledge after passing electronic training for cooks and waiters. The main objective of the test includes two sub-objectives:

The development of the questions must follow the basic principles of expediency, objectivity and validity of the test, with a focus on the practical orientation of the questions - reflecting real situations at work or professional development.

## APPROACHES TO QUESTIONNAIRE DESIGN

Objective tests, in contrast to those with free answers, give the person tested the opportunity to choose from several alternative answers.

Test questions in the test require strict adherence to certain rules when formulating the tasks, can have a large scope of tested knowledge and can be checked automatically, which increases their objectivity. The assessment is more reliable, objective and makes it possible to compare the level of mastered knowledge of many persons at the same time, and also to compare the knowledge of the same person in a different period of time.

The basis of test design is also the theory of measurement error, paying attention to the fact that the result includes the actual value plus experimental error or statistical error.

The design of the test will follow the principles of recognized good practice in the field of objective tests for measuring competences.

A test question is a clear and precise question defining the subject area and requiring an unequivocal answer or the execution of an algorithm of actions.

Other considerations in question formulation should be the use of precise, unambiguous and understandable question text, and that some of the questions include images.

The approach to be used in formulating the questions:

- Questions with 1 correct answer of the "Single Choice" type and 3 misleading answers;
- Questions with 2 correct answers of the "Multiple Choices" type and 2 misleading answers;
- Yes/No questions.

### Application 3 (Apl. 3.): Template for developing an e-learning course



Sample question of the type “Multiple Choices”

<b>Question number</b>					
1.09.03					
<b>Question type</b>					
<input checked="" type="checkbox"/> Multiple/single choice					
<b>Question title</b>					
Rights to use a shared work					
<b>Question text</b>					
Photo on the Internet is marked with CC0 (Creative Commons). This means that:					
<b>Number of responses</b>	4	<b>Number of correct answers</b>	2	<b>Points for this question</b>	10
<b>Answers</b>					
1.	The photo may be used with written consent from the author.	<input checked="" type="checkbox"/> True		<input type="checkbox"/> False	
2.	The photo can be used free of charge for commercial purposes.	<input checked="" type="checkbox"/> True		<input type="checkbox"/> False	
3.	Photo may be used free of charge for non-commercial purposes only.	<input type="checkbox"/> True		<input checked="" type="checkbox"/> False	
4.	The photo can be used for free for non-commercial purposes.	<input checked="" type="checkbox"/> True		<input type="checkbox"/> False	

Sample Yes/No Question

<b>Question number</b>	
1.09.05	
<b>Question type</b>	
<input checked="" type="checkbox"/> True / False	
<b>Question title</b>	
Rights to use a shared work	
<b>Points for this question</b>	10



**Question text**

Photo on the Internet is marked with CC0 (Creative Commons). Does this mean that the photo can be used for free for non-commercial and commercial purposes?

**The claim is...**

True  False