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Custom Learning through Innovative Methodologies and Blended training

CLIMB

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Small-scale partnerships in vocational education and training

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A4 TEST AND FIELD APPLICATION AND PROTOTYPE RELEASE

Guidelines for blended VET training, based on custom e-learning

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INTRODUCTION

This report summarizes the overall outcomes of the phase A4 of CLIMB Project, "*Test and application in the field and release of prototypes".*

The phase A4 represents the core activity of the project, understood as the closure, field testing and validation of the custom and blended learning prototypes, created by the individual partners in their respective territorial contexts.

The report returns the *Guidelines of the CLIMB Methodology,* validated and released following the field experimentation of the 3 test-projects, developed according to a shared methodological process and fine-tuned in the previous project operational steps, starting from the concrete needs of the recipient target (companies and workers) and therefore from the usage scenarios.

The work process followed is the one conceived in the project proposal:

- We operationally started from PHASE A2 "*Analysis of custom e-learning, blended learning and benchmarking methodologies*", which allowed us to carry out an in-depth study of the literature, benchmarking and experiences in the custom e-learning field, respectively in the three territorial contexts of the CLIMB project (Italy, Denmark, Greece).
- In PHASE A3 "*Development of custom e-learning and blended learning prototypes*" the methodological draft of the approach, design and development of prototypes, i.e. application cases of Custom e-learning in the 3 territorial contexts, was preliminarily identified. Each of the partners identified their own "case study" (company, workers and context) based on their interest in participating in CLIMB activities, to develop an innovative, engaging and flexible, tailor-made training course for them.
- The application test of PHASE A4 "*Test and field application and prototype release*" was the application part of the training course designed and developed in the previous step and according to a shared methodological path. The activities carried out, the outcome of the learning and final evaluation tests - STEP 6 Evaluation - (customer satisfaction of the participants and company representatives), were the concrete and objective elements supporting the validation of the methodological process described in the following pages.

The CLIMB METHODOLOGY

CLIMB project is an innovative initiative that aims to provide personalized e-learning solutions for learners who want to improve their skills and competencies in various domains.

The project has developed a custom e-learning methodology that supports organizations to leverage the vast amount of free content available on the internet but organizes it into a structured and coherent learning path that is tailored to the needs and goals of each learner. The methodology also incorporates a training and learning assessment system that monitors the progress and performance of the learners and provides them with feedback and guidance.

The methodology is designed and implemented by the CLIMB's partnership that has expertise in e-learning design, development and evaluation.

This report presents the main features and benefits of the CLIMB methodology, as well as some examples of its application in different contexts and domains.

The document is divided into six chapters (six steps) that describe the components and processes of the CLIMB methodology and illustrate how it works in practice.

The 3 Prototypes (Pilot Courses):

Before going into the merits of the CLIMB Methodology, the final output of the project, let's summarize the 3 pilot courses carried out and the specificities of each of them.
Each of the three project partners has developed a "*custom*" training course according to the shared methodological orientation and identified following the preliminary study phase in Phase A2.
Three different scenarios were taken into consideration, in terms of context, complexity, didactic approach, support technology and costs incurred, according to a shared approach in which the centrality of the "customer", participating companies and workers has never been lost sight of.

1. Italy, the case of *Inventare Insieme Onlus* (http://mediatau.it/centrotau/inventare-insieme/)

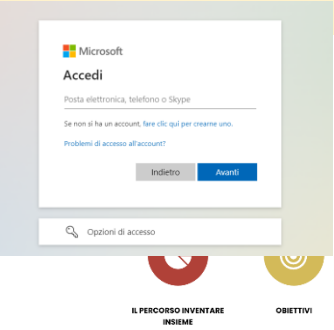
- Small company: Inventare Insieme, is a non-profit association, deals with social and territorial development, through financed projects that are repetitive and complex due to the amount of information and documents they require. Small company of 30 employees and n. 10 workers receiving the course.
- Target group: Management activity; Work area coordinator; Pedagogical coordinator; Administrative activity; Social worker; Educator. Employees from 32 to 60 years old.
- CHEAP Scenario: 100% asynchronous custom e-learning without a synchronous facilitator. Reuse of content acquired from the web on official sources and authorized for dissemination, filtered and reorganized in relation to the needs and objectives expressed.
- Needs and overall goal of the training: skills necessary to implement an internal digitization process through the implementation of the Microsoft 365 suite.

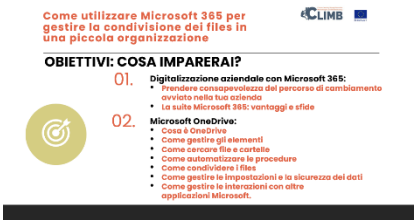
Needs:

1. implementation of innovative digital tools and platforms (ref. Microsoft TEAMS platform and Microsoft Office environment)
2. development of a new know-how (technical, commercial, organisational) for the management of services in a digitized context
3. review of the organizational model, procedures and internal operating models revisited in the light of the introduction of a new digital environment

Overall goal: How to use Microsoft Teams, SharePoint, OneDrive: Technical skills concerning Microsoft and its application customized for company processes.

- The custom-designed course: consists of three topics (Microsoft Teams, SharePoint, OneDrive) divided into micro modules, which consist of texts and videos with tutorials and practical examples, to learn the main features of Microsoft 365 and OneDrive. Self-learning questionnaires and proposed exercises, with reference to the operations or difficulties encountered daily at work. The course allows participants to monitor the progress and skills acquired on an ongoing basis.
- Technology: Microsoft Teams, an access account has been created for each participant, he will be able to use the course also in the 12 months following the closure of the project. The course is in Italian language.





2. Greece, the case of *Hellenic Culture Centre* (http://www.hcc.edu.gr/)

- Small company: Greek language school that offers online Greek language courses for all levels, it is organizing teacher training courses on how to teach Greek language to non-native speakers. It is also organizing summer camps on the island of Santorini.
- Target group: Greek language teachers teaching online, advanced levels of Greek language.
- Medium Expensive SCENARIO: Custom e-learning + facilitator (synchronous + asynchronous). Creation and Reuse of contents acquired from the web or texts, therefore official sources and authorized for dissemination, filtered and reorganized in relation to the needs and objectives expressed.
- Overall goal of the training: The main objective of the piloting in Greece was to train Greek language teachers on how they can teach online Greek literature for advanced level students. The training is based on a case study of a specific work "Honour and Money" by Konstantinos Theotokis.
- The need analysis revealed the following key findings:
  - ✓ There is a lack of training material for advanced level Greek language teachers
  - ✓ The works of modern classic Greek literature are not used frequently in online courses
  - ✓ Teaching literature online requires very specific skills in relation with the course organization, context setting and achievement of the learning objectives
- Specific learning goals:
  - ✓ Increase awareness of advanced (C1, C2) students on the classic works of modern Greek literature
  - ✓ Implement content analysis chapter by chapter online
  - ✓ Identify the main learning and discussion points for each chapter
- Contents: The course combines texts, videos, interactive exercises and audiovisual material. It also combines material that was created for the course and material that was reused.

  The content includes:
  Setting the era and the context of a writer
  Working with advanced level vocabulary and literary vocabulary
  Teaching literature online
  Setting questions for reading comprehension
  Providing feedback in an asynchronous way on reading comprehension and analysis
  The e-learning course was combined with 5 synchronous sessions (via zoom)
- Technology: The pilot is organized based on the e-learning platform of Action Synergy https://actionelearning.eu/login/ and is available in the Greek language.

3. Denmark, The case of *Aalborg Forsyning* (https://aalborgforsyning.dk/privat/)

- Big company: Aalborg Forsying (AF), Utility and Environmental Enterprise supplying the greater Aalborg area with sustainable and cost-effective services with water, heating, gas, waste- and wastewater. Unit within the Department of Heating
- Target group: mechanics and electricians from the department of Heating. Most of them are professionals older than 40 years old.
- Expensive SCENARIO: Blended learning (customize e-learning + face to face learning). Training/technical training with content created with the company contact person.
- Needs and Overall goal of the training:

  The pilot in Denmark, Consufé and AF were interested to experience and learn with emerging technologies and new learning approaches. Therefore, this pilot has a strong component of experimentation. Such as scenario-based learning, micro learning

  The need analysis revealed the following key findings:

  ✓ The Department has a specific need to train people to run the test of an emergency generator and be able to start the generator if needed. Failing to run weekly test might cost the company to get in serious issues related contracting and regulations requirements.

  ✓ There is a big age gap between the future learners. Most of the learners are in the age of 45+ years old, while a small number is around 25 years old. Therefore, the learning experiences should be carefully designed.

  ✓ The learners have the ICT competences to access online learning, however, the younger group is more into digital learning and digital active learning, such as gaming.

  ✓ The department is very busy with their daily activities, and it is difficult to put time aside to develop training.

  ✓ Potential learners have limited time to participate in learning activities.

  ✓ The training should be short, contextual, and practical.

  Specific learning goal: provide an overview of the necessary test steps for emergency generators, ensuring that they are operational and reliable in the event of a power outage.
- Contents:

  ✓ Start an emergency generator (specific type in the company)

  ✓ To Synchronize the emergency generator

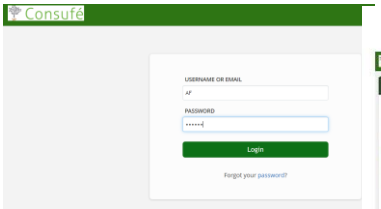
  ✓ Run a weekly test of the emergency generator (know what to check)

  ✓ Identify the components of the generator

  ✓ Pre-checking of the generator

  ✓ Register the test in the system (Drifts log)

  ✓ Know what to do in case of problems during the test
- Technology: Consufè Platform, a simple open source LMS, AI for content creation and immersive technologies. The course is in Denish.



Video content in the platform

Multimedia content in the platform

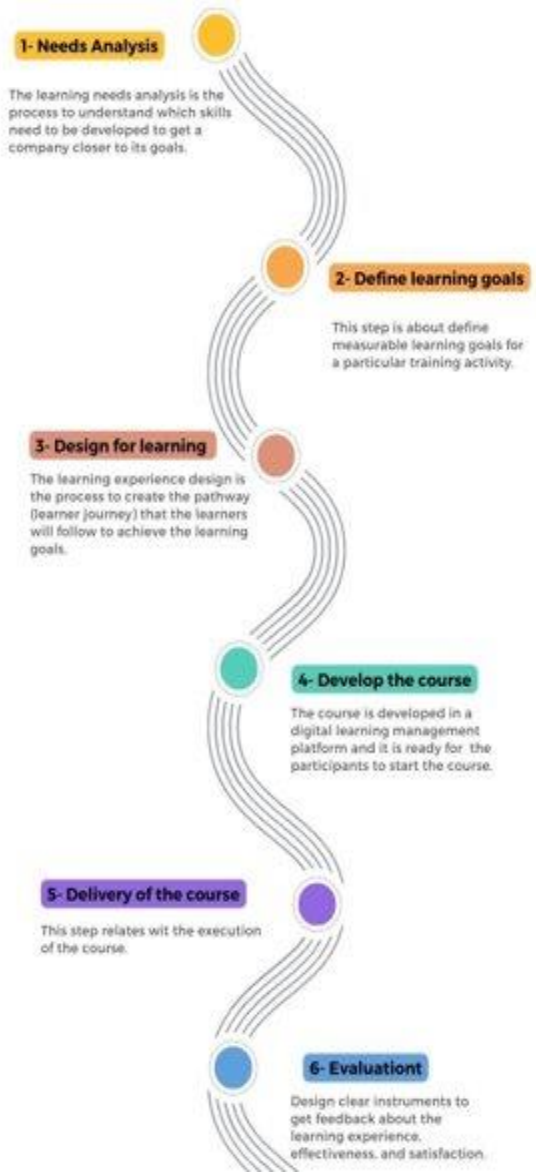
PDF content in the platform.

Webpage content

Steps of the Methodology

The CLIMB methodology consists of 6 operational steps:

1. Needs Analysis
2. Define learning goals
3. Design learning experience
4. Develop course
5. Course delivery
6. Evaluation



For each step we describe the **What** (definition and result of the step) and the **How** (activities and tools to achieve the step).

STEP 1: Needs Analysis

The first step to develop a customed e-learning course is to carry out a process of needs analysis. A needs analysis is a systematic process of identifying and evaluating the needs and requirements of the company. The purpose of a needs analysis is to determine what resources, programs, or interventions are necessary to address the identified needs and to achieve the desired outcomes.

The most common method for conducting a needs analysis is a meeting with the manager of the company, the HR manager or generally, the person that is going to be responsible for the monitoring of the training. In order to make this discussion more focused, it is possible to start with an online survey from where you would get the first basic information.

A needs analysis during this phase should cover the following elements:

1.1 Strategic Goal of the Company

Key Questions: Why does the company want/need this training? Which are the objectives that the company wants to achieve through this training?

These objectives should be clear, realistic and measurable both in quantitative and in qualitative terms (for example: a hotel wants all its employees to reach a level of B2 in English).

There are two types of problems that could be faced while setting the strategic goals of the company:

Problem	**Possible Solution**
The company expresses learning objectives that are too general. The client expresses improvement needs in a purely qualitative and difficult to measure, not clearly identifying the learning KPIs	In this situation it is important to define the field of learning and identify <u>at least one indicator of success of the initiative</u>.
The company expresses learning objectives that are too ambitious for the mix of course duration, methodology, entry skills of the participants. The client forgets that training leads to individual change and that this cannot be forced by any training course.	<u>It is necessary to negotiate indicators of success of the training course that are realistic and measurable.</u>

1.2 Skills

The skills that the learners will acquire during the training need to be listed and commonly agreed. At this stage, this list of skills should not be extensive and should concentrate on a few core skills that will be the focus of the course. These skills are going to be further analyzed and defined in the framework of Step n.2. As was the case in the previous section, the skills need to be clear and measurable. They could include knowledge of a topic, hard skills, soft skills or specific attitudes.

1.3 Target group

It is very important to know the target group, i.e. the people that are going to be trained as this is going to influence on different training decisions. More specifically, it is necessary to know the following information:

Number of people who need to be trained	How many people are going to be trained? Are they going to be trained all together or in different groups?
Profile of the potential leaners	Which is the age of the learners, how many years they are in the company, which is their level of education, have they participated in other trainings on the same or different subjects?
Current Position	Which is the current position of the learners in the company? Which tasks will they perform after they acquire the desired skills through the training?
Current Competencies	Which is the starting level of the potential learners on the topic of the training? Do all the trainers have the same starting point in relation with the desired skills?
ICT Skills	Do all the learners have a minimum ICT skills required to follow an e-learning course?
Technology Access	Which kind of devices are going to be used for the course? Do all the learners have access to a computer or there are going to be used also other devices?

1.4 Time available for the training

In this section, we need to examine all the issues that are related with the time. These issues include:

Will the training be part of the working hours?	Are the learners supposed to follow the training during the work time or after the work time?
How many hours can the training contain?	What should be the total duration of the training? How many hours are expected the learners to dedicate to the course?
How many hours per week?	Is this expected to be an intensive course (few weeks, many hours per week) or a longer course (more weeks, less workload every week)
How long can the training last (in weeks)	By when does the company need the learners to acquire the desired skills? Which is the expected duration of the training?

1.5 Modality of the training

An online training can be organised in three modalities which can be summarised in the table below:

Type of Course	Advantages	Disadvantages
Online Asynchronous	Allows flexibility in timing. Every learner can follow the course at a place and time that is more convenient him/her	It is less interactive, it does not promote collaborative learning, it does not allow the trainer to have a direct contact with the learners
Online blended: Synchronous and Asynchronous	It combines the flexibility of the asynchronous course with a personal communication which allows better and more direct interaction between the participants and the trainer	It is less flexible that the asynchronous, it is less engaging from a blended course
Blended: face to face and online	It combines personal interaction with the trainer, interactive activities and the flexibility of an online course. The trainer has a better connection with the participants	It is not possible to deliver training to learners that are in a different location from the one of the trainer. Increased costs

1.6 Budget available

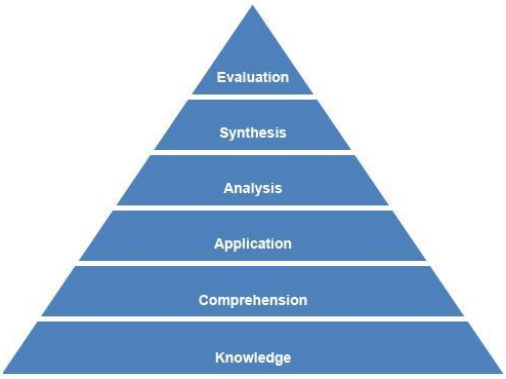
Finally, it is very important to know how much money and other resources the company can make available for the training. Other resources could include facilities, worktime, equipment etc.

STEP 2: Define learning goals

The overall needs that have been defined in Step 1 need to be further analysed in order to define the learning goals. The learning goals are defined in relation to knowledge and skills.

The Bloom's taxonomy (see figure below) is recommended to define the learning goals of the course. Bloom's taxonomy of cognitive objectives describes learning in six levels in the order of: knowledge, comprehension, application, analysis, synthesis and evaluation.

In the following link there is a description of Bloom's Taxonomy: https://fctl.ucf.edu/teaching-resources/course-design/blooms-taxonomy/



We use the following format to define learning goals: *at the end of the course the learner should be able to _____ (verb that represent a level within the Blooms taxonomy)*.
All the learning goals should be within the same level of the taxonomy.

This will can be accompanied by a description of the assessment criteria that are going to be used for those purposes as well as the evidences that are going to be required by the partners.
Each learning outcome should correspond to specific assessment criteria and evidence.
An example of how these can be presented is the following:

	Learning Outcomes	Assessment Criteria	Evidence
N	**The learner will:**	**The learner can:**	**The learner:**
1	**1.** Understand how s/he can ensure the knowledge of the product they are selling and how to calculate the price in exports	1.1 Use basic company documents (company profile, pricelist, packing list) 1.2 Negotiate payment regulations and pricing policy with the potential clients	1.1 Describes in their training log at least 6 company documents they have worked with and how it has helped their work 1.2 Collects a testimonial from their employer, stating they have discussed pricing policy with a potential client, and commenting on the outcome.
2	**2.** Understand the basic principles of exporting processes and be able to use basic exporting tools	2.1 Explain basic financial processes 2.2 Explain what incoterms are 2.3 Take and manager orders	2.1 Recognizes and uses all Banking instruments related to the financial process of successfully handled and finalized cases of International Trade during the training period and by collecting a testimonial from their employer.

		2.3.1. Maintain evidence of all projects/work	2.2 Writes and negotiates contracts by using the appropriate incoterm for the delivery of good. 2.3 Is able to handle and complete successfully shipments of goods, as per signed contacts of International Trade and by collecting a testimonial from their employer. 2.3.1. Is able to present a proper business flow of documentation, while his training program, approved by his instructor and by collecting a testimonial from their employer.

STEP 3: Design learning experience

In STEP 1, you worked together in your organization to assess the learning needs for your learning experience against your business goal. In STEP 2, you defined what you want your learners to do as result of the learning experience.
In this step we help you to navigate in the process of designing your blended learning experience. In the process of designing a learning experience, we as designers, make deliberate choices related to duration, activities, content, assessment, learning pathway, etc. In this step we deal with learning activities, like projects, simulations, games, exercises, content that will help the learners to achieve the learning goals.

We are living in a new era for corporative development and training. The current demand is to focus on providing learning experiences that will foster work-based learning. The current demand for blended learning initiatives is focused on the use of technologies to facilitate active and meaningful learning.
By completing this step, you will be able to:

- Align your learning activities and learning goals
- Brainstorm about the different elements that your learning experience might include
- Build a blueprint for a learning experience that respond to your learning needs and learning goals

3.1 Key aspect of Designing learning experience

By learning experiences, we mean the different kinds of activities that have been carefully designed for a person to learn a specific topic or develop certain skills. This approach is based on experiential learning which recognizes that learning happens through experiences related with the **learner situation** and **context** and not much through content. ***This way of framing your blended learning activities shift the mindset from content and facilitator centered approach to a learner centered approach***.

If we aim to design learning experiences that are relevant for our learners, we need to understand them, that is why in step 1, we have used time to know our learners, their needs, current competences and desires. The information collected from the previous step is really important because your learners are within a specific context that will affect (foster or hinder) their learning. This context also will influence the decisions that you need to make in your learning design.

The other key aspect to design learning experiences is to have clear underlying beliefs about how people learn. In Climb we believe that learning happens through social interaction, collaborative learning and by

doing. Therefore, we promote creating meaningful learning environments that allow learners not only memorize concepts but real changes that will affect their performance in their work.

3.2 Tools

As in the previous steps, we need some tools to guide the process of creating the course. In this step of the CLIMB methodology, we use three tools:

1. ***The brainstorming canvas***: for collecting ideas about all the elements of your course
2. ***Inspirational cards***: concrete examples of possible technologies, learning activities and pedagogies that could be used in your design
3. ***Course blueprint template***: the collection of all the information about your course – vision, target group, learning goals, duration, schedule, activities, etc.

The brainstorming Canvas

The Canvas is designed to allow your team to generate ideas and take decisions for all the elements of course. When using the Brainstorming Canvas your team create a storyboard for your course.
The canvas is designed using the ACAD framework (https://doi.org/10.1016/j.destud.2019.05.003) which promotes design for learning considering the social aspect, the physical and digital tools, the learning environment and the pedagogical approaches.
The brainstorming canvas contains 13 elements that you complete it following the order indicated there:

1) **Name**: based in the information from the previous steps
2) **Pedagogy/learning approach:** this refers to your understanding about how adults learn and how you can create learning activities and content to support their learning process (problem-based learning, collaborative learning, scenario-based learning, etc.). You use the green inspirational cards here, and you could select couple of cards to start the process, when you are done with all the steps in the Canvas, you will come back to review your pedagogy. It could be that you change your pedagogy or decide to have 2 or 3 different pedagogies.
3) **Overall modality**: this is general modality of the course, for example self-paced, with facilitator, online, blended, online with synchronic sessions. This information is coming from step 1 of the methodology.
4) **Duration**: this refers to the number of hours and weeks that the organization has defined for this course. This is coming from the step 1 of the methodology.
5) **Learning goal**: In the first column your team add the learning goals defined in the step 2 of the methodology.
6) **Experiences/learning activities:** here you ask, how will we help the learners to achieve the learning goals. Those experiences should be significant and context related to the learners' work. Check the orange cards to get some examples. (Lectures, questions and answers, polls, role play, surveys with immediately data from other learners, group work, breakout rooms, videos).
7) **Topics**: here you ask what key concepts your learners need to know in order to achieve the learning goals. You create a list of the topics. You will review this list and select only the key topics needed. The evaluation is done in relation to the learning goals and the time available.
8) **Content**: here you ask what content is needed to achieve the learning goals or to complete the learning experience. The need analysis might give you some inputs about the kind of content and your learners might need or the content that you can use for your course. The content itself can be turned in an experience by using videos, interactive materials, infographics, etc. You can create content, use content that you already have or curate content. This aspect will be discussed in Step

4 of the methodology. You can use different color to distinguish between existing, create or curate content.

9) **Digital learning tool**: what technologies you have to create this learning experiences and provide the content? You start listing the technologies that you have in your organization and that can be useful for this learning experience. The technologies can be technologies to enhance learning or production technologies that can be related to the learning goals. After listing the technologies that you know, you can check the yellow cards to get inspiration about other possible technologies.
10) **Learning environment**: here we refer to the mix of synchronous (online), asynchronous and physically environments. This can be for example, learners working individual online, individual doing an exercise in their work environment (hybrid learning), collaborative exercise online, etc. You decide the modality by looking at the learners needs, the type of content that you have and how to promote collaborative learning and participants engagement.
11) **Assessment**: it allows learners and facilitators to monitor progress towards achieving learning objectives. We propose to use two different types of assessment: formative and summative. **Formative assessment** occurs throughout a class or course and refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. **Summative assessment** is done at the end of a unit, topic or courses and evaluate to what extend the learners have achieved the learning goals (https://poorvucenter.yale.edu/Formative-Summative-Assessments)
12) **Duration**: how many minutes, hours or weeks will the activity last.

Name of the course

Modality

Pedagogy

Duration

Canvas - Brainstorming

Learning Goal	Learning Experiences	Topics	Content	Digital tools	Learning environment	Assessment	Faciliator role	Duration

Existing Content Create Content Curate Content Summative Evaluation Formative Evaluation

Inspirational cards

The cards are to be used together with the Canvas and they present descriptions of concrete technologies, learning approaches and learning activities that could be used in your course. Inspirational cards (Attached) can be downloaded **here** https://sdiitalia.sharepoint.com/:w:/r/sites/C.L.I.M.B.Erasmus/_layouts/15/Doc.aspx?sourcedoc=%7B67B72E06-F37D-4502-8ECA-5233C3809728%7D&file=Inspirational%20cards%20Learning%20to%20print.docx&action=default&mobileredirect=true. It is recommendable to create your own cards.

Step by step to design your course using the brainstorming canvas and the inspirational cards

Materials

- Use post-it
- Markers
- Print the cards in color and a canvas in a large size

Steps

- Place the canvas in the middle of a table where all the members of the design team can see it and contribute easily
- Complete the headlines of the Canvas
- Add your learning goals in the first column
- Start brainstorming about the learning activities that students would do to achieve this learning goal. Think about different experiences that your team can create that suite to your learning goals and your audience (collaboration tools, role plays, video submissions, pre-course, outside of course). Use the orange cards to get some inspiration
- Continue brainstorming about the content that students need to study to carry on the learning activity. Use post-its
- Define concrete content that you will provide the learners. What do you currently have that can be utilized/modified and what may need to be created? Are there any gaps or challenges? This could be for studying the concepts or carrying out some learning activities. Use post-its or markers
- Check which technology could help you to implement the learning activities and delivery the content. You can use the yellow cards as inspiration
- Define the learning environment where the learning experience will take place. Use post-its or markers
- Brainstorm about possible learning assessment activities. It is not necessary to have an activity to assess each of the learning goals, maybe one single activity can assess two or more learning goals.
- Define how much time will the participants needs to complete the different learning activities
- Have a look at the landscape of the Canvas and choose the ideas on which you will construct the final course design. You might consider feasibility issues.

Once that you have your selected ideas, you can use this check list to review if your course is aligned with recommended design principles:

CHECK LIST
DESIGN FOR LEARNING

Based in the work of: Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of Massive Open Online Courses (MOOCs). Computers & Education, 80

1 **Problem-centred**
Are the participants using real and contextual problems to learn?

2 **Activition**
Do learners activate existing knowledge and skill as a foundation for new skill?

3 **Demostration**
Do learners observe a demonstration of the skill to be learned?

4 **Application**
Do learners apply their newly acquired skill to solve problems?

5 **Integration**
Do learners reflect on, discuss, and defend their newly acquired skills?

6 **Collaboration**
Do learners collaborate with others?

7 **Differentiation**
Are learners provided with different avenues of learning, according to their need?

8 **Feedback**
Are learners given expert feedback on their performance?

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Before you move to the blueprint template, as yourself: Is the time enough to complete all the learning activities?

Course blueprint template

Transfer the elected ideas and decisions to a final document where you document the learning activities, content, modalities and technologies for each of your learning goals. You can download the Blueprint here.

STEP 4: Develop course

This 4th step consists in moving from the blueprint (ideas) to a ready course to be launched (a product).

We need to choose how to do:

- Development or curate the **content**
- Select the **digital learning platform**
- Create the course in the digital platform
- Consider the **cost** development factor.

Let's look at the points listed individually: contents and related critical aspects, digital platforms, costs.

4.1 Content availability

The previous steps consist of listing or identifying the content, activities and assessment, in these steps is the development of those elements.
For the development of contents, it is important to understand how mandatory and binding the educational program is, based on the results of the previous steps of the Methodology.
In general, about that, we can find ourselves faced with two distinct typologies of training needs:

1. *Existing and clearly identified qualifications or professional profiles*: In this case the commitment of custom elearning and training results are facilitated. The training contents are already existing and available made by solution providers (such as Microsoft, Google, Hubspot etc.). Therefore, the element of success of the intervention based on custom e-learning is the support of other contents (synchronous or asynchronous) that allow the participant to learn how to learn the skills acquired.
2. *Training not linked to a specific job profile:* It is a more complex case than the previous one. Custom e-learning must work mainly on the expected skills and know-how. To do this, not having professional profiles of reference, it is important to make a precise list of these skills and make a mapping of existing tutorials. *Youtube.com* is one of the main source of access to this free content.

There are a lot of free system that provides access to curated online learning and support materials and content creation tools, led by an international community of educators, learners and researchers:

- ✓ Chat GBT OpenAI
- ✓ www.merlot.org
- ✓ www.oercommons.org
- ✓ www.creativecommons.org

and many other sources that depends on the context and the target.

These resources are either freely available or can be used under a Creative Commons license.

The task of the custom e-learning expert becomes to design and set up the entire learning path.

The method involves:

1. Divide the learning objectives into simple objectives
2. Select suitable existing content. Alternatively, build small training pills, by registering through the specific technology selected (e.g. Microsoft Teams or similar).

So, one of the key steps of the CLIMB methodology is to develop the course content based on the learning objectives and the target audience. This step involves searching for free online resources that can be used as learning materials and evaluating their quality and relevance. In this chapter, we will explain how to perform a web search for free training content and how to assess its reliability.

4.2 Reliability

Web search is a powerful tool that can help to find a variety of online resources, such as articles, videos, podcasts, courses, etc. However, not all resources are equally reliable, accurate, or suitable for learning goals. Therefore, CLIMB project has defined some criteria to filter and select the best resources for the custom e-learning course.
Some of the criteria that can be used are:

- *Authority: Who is the author of the source of the resource? What are their credentials and expertise? Are they reputable and trustworthy?*
- *Currency: When was the resource created or updated? Is it up to date and relevant for the topic?*
- *Accuracy: Is the resource based on facts, evidence, or research? Does it provide references or citations? Are there any errors or inconsistencies?*
- *Objectivity: Is the resource free of bias or opinions? Does it present multiple perspectives or viewpoints? Does it have a clear purpose and audience?*
- *Coverage: Does the resource cover the topic comprehensively and in depth? Does it match the learning objectives and level? Does it provide enough information and examples?*

To apply these criteria, in CLIMB project were tested various strategies, such as:

- Checking the URL or the domain name of the resource.
- Reading the *About Us or Contact Us* sections of the website or the resource. These sections can provide information about the author, the organization, or the mission of the source.
- Comparing the resource with other sources on the same topic. This can help to verify the accuracy and consistency of the information, and identify any gaps or discrepancies.
- Looking for reviews, ratings, comments, or feedback from other users or experts. These can give an indication of the quality and usefulness of the resource.

By using these criteria and strategies, CLIMB performed a web search for free training content and evaluated its reliability. This helps to develop a course that is based on high-quality and relevant online resources that meet learning needs and expectations.

4.3 Digital Learning Platform

Once have been identified the contents of multimedia training, CLIMB project mounted them in a learning process. Many of the platforms available for free can be used for this purpose. We point out that most LMS are designed for the sale of asynchronous online training and standard package for which it is difficult to apply to a real custom e-learning.

When selecting an e-learning platform for a custom e-learning course, it's essential to consider the specific needs and objectives of the training program.

In CLIMB project were provided a comparison between *Microsoft Teams and Moodle*: both Microsoft Teams and Moodle are viable options, each with distinct advantages.

Microsoft Teams offers great flexibility and customization options, making it suitable for collaborative and interactive learning experiences. Its integration with other Microsoft tools allows seamless content sharing, real-time collaboration, and video conferencing, fostering learner engagement. However, as Teams is not primarily designed as an LMS, its tracking and reporting capabilities might be limited compared to dedicated LMS platforms.
On the other hand, Moodle is a robust Learning Management System (LMS) that provides comprehensive course management features, including content organization, assessments, and tracking tools. It offers a structured environment for learners and instructors, with extensive reporting capabilities and support for gamification and certifications. However, Moodle might require more initial setup and configuration compared to Microsoft Teams.
Ultimately, the decision depends on the course requirements and the desired level of customization and reporting. If the course demands strong tracking and assessment capabilities, Moodle might be the preferred choice. On the other hand, if flexibility and collaboration are vital, Microsoft Teams could be more suitable. It is crucial to evaluate both platforms against the specific needs of the custom e-learning course to make an informed decision.

4.4 Copyright

Regarding Content there is the option of develop content or use available material. In the case of the second option, when curating and organizing publicly available web content for a custom e-learning course, it's crucial to be mindful of copyright laws to avoid potential infringement issues.
Here's how to approach copyright concerns while creating an effective learning journey:
Content Selection:
Prioritize open-licensed content: Look for resources that are available under open licenses like Creative Commons, which allows for more flexible usage with proper attribution.
Verify permissions: Seek permission from content creators or copyright holders when using materials that are not explicitly labeled under open licenses.
Proper Attribution:
Cite sources: Provide clear and accurate attributions for all external resources used in the e-learning course. Include the author's name, title, source, and license information, if applicable.
Fair Use and Educational Use:
Understand fair use: Familiarize with fair use principles, which may allow limited use of copyrighted materials for educational purposes under specific conditions.
Evaluate transformative use: Assess whether use of copyrighted content is transformative, adding substantial value or offering a new educational context.
Link to External Content:
It’s better to share links: rather than directly incorporating copyrighted materials. If the educator provide links to external resources, this approach allows learners to access the content while respecting copyright laws.
Open Educational Resources (OER):
When possible utilize OER: Explore openly licensed educational resources available on platforms like OER Commons or OpenStax. These resources can be used freely while adhering to their respective licenses.
Compliance Check:

Conduct a thorough review: Before publishing the custom e-learning course, is important to conduct a comprehensive review to ensure all selected content complies with copyright regulations.
We suggest seeking legal advice: If anyone is uncertain about copyright implications, consult legal experts specializing in copyright and e-learning to ensure full compliance.
We recommend to be conscientious following copyright guidelines and integrating open-licensed content to curate a rich and legally compliant custom e-learning course. Proper attribution and the use of transformative content will enhance the learning experience while respecting intellectual property rights.

4.5 Content Curation and Sequencing

4.5.1 Introduction

In the CLIMB project, the implementation process of the custom e-learning course begins once the freely available web contents have been identified. The course is designed to create a blended learning experience, seamlessly integrating tutorials, videos, in-depth materials, tests, and practical exercises within the participants' work context.
It is the content organization activity. In CLIMB we arranged the materials in a logical sequence that ensures a smooth learning progression.
The arrangement of materials in a logical sequence serves as a guiding pathway for learners, promoting a coherent understanding of the subject matter. A thoughtfully structured curriculum, with content curated to address specific learning objectives, aids in creating a cohesive narrative that unfolds progressively. By introducing foundational concepts before venturing into more advanced topics, learners can build a strong knowledge base, fostering a sense of continuity throughout the course. Additionally, breaking down complex information into manageable segments enables learners to digest the material without feeling overwhelmed, enhancing their overall engagement and retention. This strategic organization, coupled with periodic reinforcement exercises and practical applications, fosters a dynamic learning environment where participants can navigate through the content with ease, leading to a more meaningful and impactful learning experience.

4.5.2 Blended Learning Design

This activity combines self-paced online components (tutorials, videos) with structured activities (in-depth materials, tests, exercises) to create a blended learning journey. What is proposed represents another way of understanding the blended path as a combination of online and in-person activities.
The blended approach began with a series of interactive tutorials and video modules, accessible at the learners' convenience. These modules covered fundamental concepts and practical demonstrations, providing a solid foundation for subsequent learning. Learners appreciated the flexibility of accessing the content on their own schedule, which allowed them to control the pace of their learning and revisit topics as needed.
To enrich the learning experience further, we integrated structured activities into the curriculum. In-depth materials, such as articles, case studies, and research papers, were provided to learners seeking a deeper understanding of specific subjects. These resources were curated to align closely with real-world scenarios, encouraging learners to explore practical applications of their newfound knowledge within their work contexts.
One of the highlights of our blended learning approach is the practice component. We device work-based exercises that participants could perform within their respective work environments. These exercises challenge learners to apply the concepts learned and develop practical problem-solving skills. By relating

the learning directly to their day-to-day responsibilities, participants experienced firsthand the relevance and applicability of the course content.
Throughout the journey, peer interaction play a pivotal role. Discussion forums and virtual classrooms facilitate collaborative learning, where learners could exchange experiences and insights. These engaging discussions inspire a sense of camaraderie and encourage participants to share best practices and innovative approaches, further enriching the learning experience.
As facilitators, must be monitored learners' progress and provided personalized feedback on their performance in the quizzes and practical exercises. This personalized support nurture a sense of mentorship and encouragement, fostering a positive learning environment where learners felt valued and supported in their development.
In retrospect, the Blended Learning Design is an effective and versatile approach. By thoughtfully combining self-paced online components with structured activities, CLIMB's custom e-learning journey empower participants to thrive in their learning endeavours. The flexibility and diversity offered by the blended approach not only enhance engagement but also facilitate the application of knowledge in real-world settings, resulting in a holistic and impactful learning experience.

4.5.3 Self-assessment and feedback

Self-assessment quizzes could be strategically placed after tutorial or video module. These quizzes serve as formative assessments, enabling learners to gauge their understanding and identify areas requiring further focus. This immediate feedback empowered learners to actively address gaps in their knowledge, fostering a sense of ownership and accountability for their learning progress.
In general, in the realm of custom e-learning, a self-assessment system is a pivotal element that empowers learners to take charge of their learning journey. By reflecting on their progress and evaluating their knowledge and skills, learners can gain deeper insights into their learning outcomes and identify areas for improvement.
The CLIMB process of creating an effective self-assessment system involves careful planning and thoughtful execution to ensure its alignment with the course objectives and learner needs.
Purposeful Design:
The first step in implementing the self-assessment system is to establish a clear purpose for its integration into the custom e-learning course. Consider the course objectives, learning outcomes, and the skills learners are expected to acquire. The self-assessment system should complement these goals, providing learners with an opportunity to gauge their proficiency and progress toward mastery.
Diverse Assessment Formats:
To cater to different learning preferences and objectives, is important to incorporate a variety of self-assessment formats. These may include quizzes, self-evaluations, reflections, case studies, or interactive exercises. Diverse formats encourage active engagement, enabling learners to explore their knowledge from different angles and contexts.
Seamless Integration:
Integrate self-assessment components throughout the course journey, ensuring they align with the content and learning milestones. By strategically embedding self-assessment opportunities at key points, learners can evaluate their understanding of essential concepts and apply them in relevant scenarios.
Encourage Reflective Practices:
Promote reflective practices within the self-assessment system. Encourage learners to critically analyze their own performance, identify strengths and weaknesses, and connect their learning experiences with

real-life situations. Reflection fosters a deeper understanding of the subject matter and enhances long-term retention.

Transparent Assessment Criteria:

Provide learners with clear assessment criteria and rubrics to guide their self-evaluation process. Transparent guidelines help learners understand the expected standards and performance levels. This clarity allows them to make informed judgments about their progress.

Timely Feedback and Goal Setting:

CLIMB suggests to Implement a mechanism for timely feedback following self-assessment activities. Immediate feedback helps learners address misconceptions and reinforce their learning. Moreover, encourage learners to set actionable goals based on the feedback received, fostering a growth mindset and a sense of purpose in their learning endeavors.

Learner Autonomy:

The self-assessment system should empower learners to take ownership of their learning journey. Foster learner autonomy by creating a supportive environment where learners are encouraged to explore topics of personal interest and self-directed learning paths.

Continuous Improvement:

Iteratively refine the self-assessment system based on learner feedback and performance data. Continuously improving the system ensures that it remains relevant, aligned with learner needs, and supportive of the overarching course objectives.

More details in the Steps 6 of the Methodology.

4.6 Cost setting

When organizations increasingly embrace custom e-learning as a flexible and efficient training solution, is important to keep attention to CLIMB understanding on the cost implications of various course design options that become crucial.

CLIMB's comparative cost analysis aims to assess three distinct approaches: a fully asynchronous e-learning course utilizing free resources, a facilitated e-learning course with dedicated support, and a blended learning model combining custom e-learning with traditional in-person training.

A) Fully Asynchronous E-Learning with Free Resources (Cheap Scenario):

A fully asynchronous e-learning course relies solely on self-paced online components with no live facilitation. Costs for this approach primarily include content curation, platform licensing fees, and development tools. While using free resources lowers content acquisition expenses, significant investment in course design and development remains necessary. Additionally, as learners proceed independently, the absence of dedicated facilitators might impact engagement and personalized support. Lower initial investment due to free resources, but potential trade-offs in learner engagement and support, impacting long-term effectiveness.

B) Facilitated E-Learning with Free Resources (Medium Expensive Scenario):

In this approach, a facilitator provides support, guidance, and feedback to learners throughout the course. Additional costs include facilitator compensation and associated training. The facilitator enhances learner experience, driving higher engagement and personalized assistance. However, these benefits come at an extra cost, potentially making this option more expensive than fully asynchronous e-learning.

Moderate costs with added facilitator expenses but ensures learner engagement and personalized support, leading to improved learning outcomes.

C) Blended Learning Model with Custom E-Learning and In-Person Training (Expensive Scenario):

A blended learning model combines the advantages of custom e-learning with face-to-face instruction. This approach incurs development costs for custom e-learning content and platform usage fees. While custom content creation can be costlier, it offers tailored learning experiences and better alignment with organizational goals. In-person training introduces expenses related to venue rentals, trainers' fees, and materials. The blended model offers an interactive and holistic learning experience, but it can be the most resource-intensive option, especially for larger groups.
Higher overall investment with custom content creation and in-person training costs, but provides a comprehensive learning experience, leveraging both e-learning benefits and in-person interactions.

When assessing cost factors, organizations must also consider the long-term returns on investment (ROI). The custom e-learning's scalability and reusability may offset initial expenses over time. Additionally, the effectiveness of training and the resultant impact on performance and productivity should be weighed against the costs. The CLIMB comparative cost analysis highlights the trade-offs and advantages of various custom e-learning approaches. Each option presents unique benefits and considerations, ultimately requiring a careful evaluation of organizational needs, learner preferences, and budget constraints. While fully asynchronous e-learning may provide cost savings, facilitated and blended learning models offer enhanced learner engagement and support, potentially yielding higher ROI in terms of performance improvement and skill development. A thoughtful analysis of these factors will guide organizations in making informed decisions regarding custom e-learning course design and investment.

STEP 5: Course delivery

At this point you have your course blueprint ready, and all the content and activities well described. Furthermore, you have chosen the digital learning platform that you are going to use to implement your course. Then, we move to the development of your course in your digital learning platform. After you have your course ready in your platform, you need to test that all the functions are working well and that your future participants can access the course without any problem. Then you are ready to launch and start your courses. To support this step in Climb we have prepare this check list of the things that you should keep in mind and should do:

1. Create the instructions and the forms that will allow potential participants to sign up for the course. Make sure that when participants sign up, they get confirmation and clear instructions about how to get access to the courses. Username and password (create username and code, self-enroll, using authentication through company's credentials, etc.), link to access the course and technical requirements
2. One week before the course starts, send a Welcome email to the participants. The welcome email should include the learning goals, the timeline, introduction of the facilitators, the main learning activities, requirements to get the certification and contact information in case of questions or problems
3. If your learners are not familiar with your learning platform, make a short video telling them where and how to find the different functions and materials.
4. Send a weekly email to guide the learners, this could be telling them what they achieved the previous week and what they are going to do the week after. If the course is a self-paced course, make sure that when you finish a unit you make a summary of what they should have achieved and what they will find in the coming activities and content.

5. Make sure that you collect data to improve your course in the future
6. Make sure that you follow up the progress of the participants
7. Clearly describe how the participants will earn a certification, if after successful completion of the course participants will receive one.
8. When the course comes to the end, make sure that participants receive an email with a formal closing of the course.

STEP 6: Evaluation

At the end, the course needs to be evaluated. The purpose of the evaluation is to:

- Reflect on the successes and challenges of the course
- Improve the training the next time it will be organised

The training evaluation needs to be based on the feedback from the participants of the course as well as the company. The feedback from the participants can be gathered right after the end of the course while the feedback from the company can be gathered a little bit after when it will be able to comment on the new skills of the learners. The parameters that are going to be evaluated include:

- ✓ learner experience and satisfaction
- ✓ effectiveness
- ✓ customer satisfaction.

These can be measured with an evaluation questionnaire that should be brief and allow the participants to reflect on the whole course and the skills acquired. An example of a form that could be used is the following: https://forms.gle/gPiXX7sFooh3g1g69.

The feedback from the company could be made through a discussion with the person that was involved in the Needs Analysis organised in the framework of Step 1. In the framework of this discussion, you will need to go through the different learning objectives that were set and discuss whether they have been achieved. You will need also to address the challenges that were faced during the course (if any) and how these could be improved.

CONCLUSION

In conclusion, it is important to reiterate that the personalization of training does not only concern the contents but a whole series of key elements that we have analyzed individually in the report.
CLIMB project has allowed us to identify and understand some key points of custom eLearning and blended learning: technology, customization, learning and methodological approaches, pedagogy, cost, and challenges to design customized blended learning.
The personalization of the training course therefore, does not focus on the product but on the process which is built according to a "*learner-centred*" approach, where all the elements analyzed are functional to the planning of an ad hoc, effective and stimulating training experience.

For the purposes of effective and truly personalized planning, the objectives and needs of the reference target must be established (*where they are and where they want to go*) and detailed in terms of skills and clear, measurable and shared indicators.

Final recommendations to design an optimal customized blended learning experience:

- Understand your target group and the learning goals before deciding the delivery modality.
- Adopt learner-centered design.
- Design training courses with real problems, contextual situations, concrete cases concerning the target group (problem-based learning, scenario-based learning, real problems and group work).
- To ensure effective customization, you don't need an infinite list of contents, but a few tricks are enough:
  - ✓ Divide the lesson content into small modules to allow the student to select the micro-topic to learn.
  - ✓ Make the sequence of lessons on the LMS flexible. In this way the student can skip the content he already knows and select what he wants to learn.
  - ✓ Curate the content by reporting examples, case studies and games in line with the students' interests.
  - ✓ Provide for different ways of using the same content: video, audio, text, presentations.
- The curation of content is a way to go, however, it is a new field that needs more methodological guidelines, follow the development of the topic to get more competences to apply content curation.
- The creation of high-quality e-learning content can be a costly endeavour. Despite efforts to explore cost-effective alternatives, it was observed that creating tailored and engaging content required a significant investment of time.
- The alignment between training goals and company's needs is one of the most relevant issues within learning and development in the corporate sector. In the other hand, L&D professionals and leadership might have difficulties to talk the same language. The utilization of a co-creation workshop to identify the needs analysis provides a successful approach. Dialogical sessions facilitated active participation, collaboration, and knowledge sharing among leadership, technical staff, and learning designer.
- Choose a Learning Management System-LMS platform that allows active learning and learner centered learning. Furthermore, look after platforms that will use artificial intelligence and data analysis to track learners progress and competences development. This will help to apply adaptive learning.
- There are many new technologies that can support meaningful and effective learning, remember to link those technologies with pedagogical principles. In other words, it should be learning driven and not technology centered.
- The participant must be free to explore different contents in a very short time and, often, the acquisition of information follows inorganic paths, jumping from one idea to another in continuous references.

ATTACHED DOCUMENTS

N.1 Attached – Needs Analysis Template
N.2 Attached - Need analysis and learning goals
N.3 Attached – Blueprint template
N.4 Attached – Brainstorming Canvas
N.5 Attached – Inspirational Cards.