


# GUIDELINE

## DEVELOPING DIGITAL LEARNING MATERIALS

A project of the Swiss Agency for  
Development and Cooperation SDC

 Schweizerische Eidgenossenschaft  
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Swiss Agency for Development  
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# 01

# ROLES AND WORKFLOW IN THE DEVELOPMENT OF DIGITAL LEARNING MATERIALS

The development of digital content is a complex process that should be based on a well-organized work between actors of different roles. As we can see, a network is created with the participation of project members, institutions' management unit, pedagogical experts, developers of learning materials and digitalization team, based on continuous collaboration, experience exchange, pedagogical and peer-to-peer review, up to the finalization of digital content. The following scheme represents a structure of roles and expertise to be set up before starting the digital content development process.

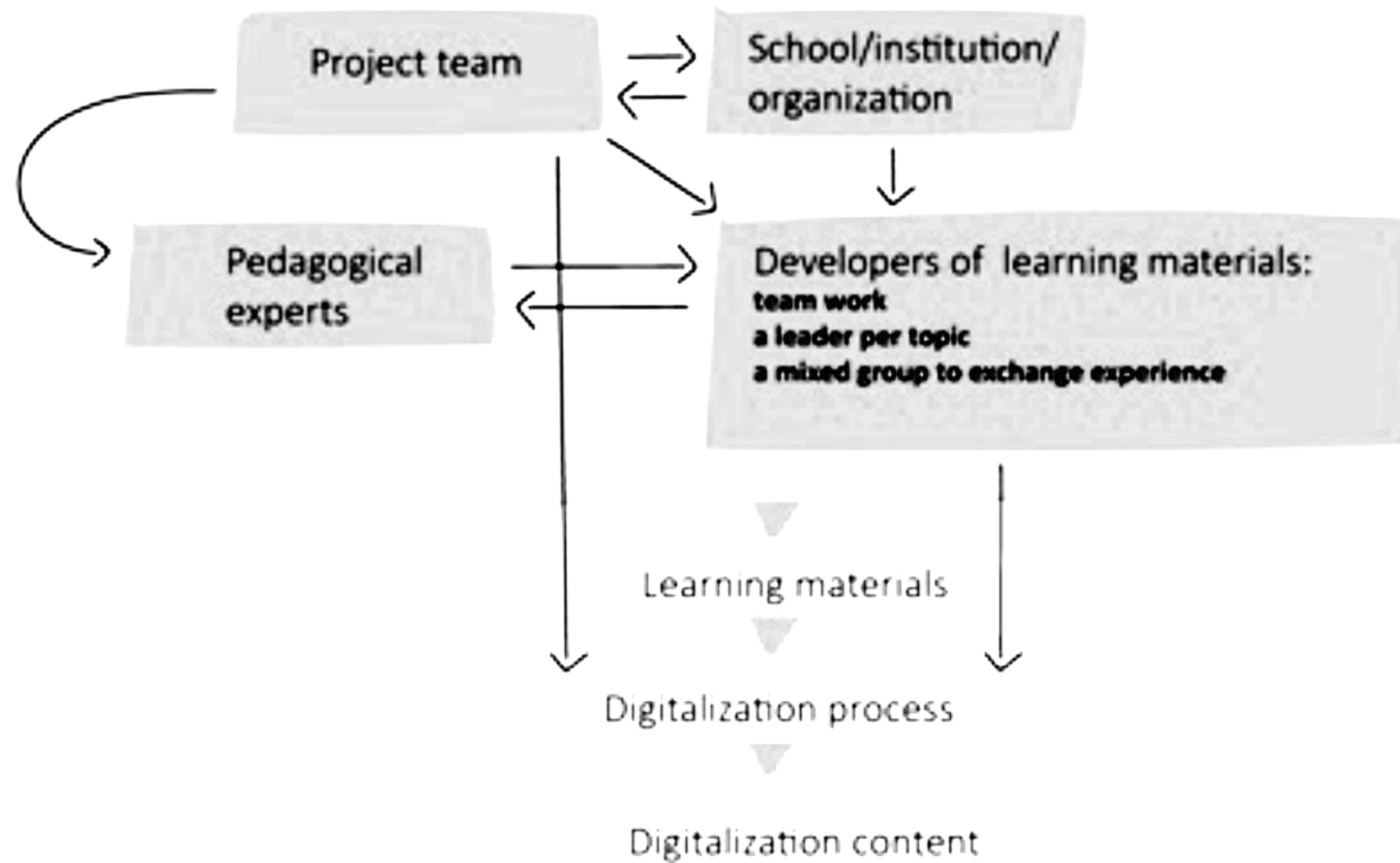



Figure 1: Roles and expertise in the digital content development process



The project team coordinates and guides all the process of developing digital learning materials. The project team works closely with the schools in order to assess the needs for digital learning materials and to set the priorities in terms of directions, subjects or modules.

The developers of learning materials are chosen based on their expertise and potential contribution to each subject/module. A special attention is given to the group composition by mixing teachers/experts of different schools and regions in order to enhance the experience exchange. Each learning material is peer-reviewed within the group.

Learning materials run through filters of pedagogical expertise. Pedagogical experts work closely with the material developers by ensuring all principles and criteria are met and by providing suggestions on how to better adapt and improve the learning materials for a digital use.

After pedagogical expertise and reflection of suggestions, the learning materials are digitalized by the project's digitalization unit. The digital content is then available for teachers and students.

# 02

# PRINCIPLES AND CRITERIA FOR CONTENT EFFECTIVENESS

Digital learning materials should be based on all the didactic principles just as all learning materials, no matter how or where the learning process will be carried out, but special attention should be paid to the learner-focused approach, engagement and interactivity. In the same time, several criteria should be taken into consideration to ensure that the digital content is effective and enhances the learning experience.



Figure 2: Main principles and criteria for effective digital learning materials

# PRINCIPLE 01

**Digital learning materials should match the program, curricula and learning objectives.** Whether the content is made for students, trainees, employees, etc., it should be based on the respective program/curricula/qualification level and should aim to achieve the learning objectives. We will talk about this in details in the next session.

# PRINCIPLE 02

**Digital learning materials should be based on the domain's main concepts and be up-to-date with the domain's development.** Providing up-to-date materials mean that the materials should be based on the domain's latest achievements and they should be frequently updated even after digitalization.

# PRINCIPLE 03

**Digital learning materials should ensure a learner-centered approach:** The learner should be at the heart of the digital learning materials and the activities included. Whether he/she is learning at class or at home, led by the teacher or independently, the learner should feel that the learning material is oriented towards him/her. This could be achieved by taking into consideration the learner's profile, needs and interests, as well as by inserting examples of the typical learner's everyday life (e.g. we can integrate a study case on professional practice if the learner is currently on apprenticeship).

# PRINCIPLE 04

**Digital learning materials should be support logical order in activities and given information:** According to didactic principles, the learning material should provide a gradual shift:

- from already-given information to the new one;
- from what is easier to what is more complicated;
- from what is simple to what is more complex;
- from concrete to abstract concepts;
- from specific to general etc.

# PRINCIPLE 05

**Digital learning materials should support and promote inclusiveness:** Digital learning materials should be inclusive and suitable to all categories, without disadvantaging or discriminating learners for physical, cognitive, gender, racial or ethnic reasons.

# PRINCIPLE 06

Digital learning materials should provide a various and improvement-prone assessment system

**Digital learning materials should provide a various and improvement-prone assessment system:** The digital learning materials should make possible formative and summative assessment for a better understanding of the learner's progress, difficulties and gaps. The materials should also make possible not only the traditional assessment form the teacher to the learner, but also peer-to-peer and self-assessment. This rich assessment system combined to the platform's functionalities in terms of instant feedback creates a more powerful and meaningful engagement on the learning process and supports the teacher to better understand what needs to be improved.

**Box 1:** Ways to support an efficient assessment system for digital learning materials

- Real-time questions, discussions, short tests etc., to understand if the information is being properly absorbed.
- Peer-to-peer assessment instruments e.g. group assignment, role-playing games etc.
- Self-assessment instruments, e.g by making the learner ask himself questions as:
  - o Was this easy or difficult for me to understand?
  - o Did I properly understand the main concepts?
  - o Did I take into consideration all possible methods/approaches to solve the problem?
  - o What should I work on more?
  - o One a scale 1 to 10, how would I score myself?
- Instant feedback questions/quizzes by including the right answer.

# PRINCIPLE 07

Digital learning materials should encourage engagement and interactivity

**Digital learning materials should encourage engagement and interactivity:** In order to be effective, the digital learning material should stimulate all the learners to engage in the learning material, whether supervised by the teacher or learning on their own. The content should make the learner immerse in the learning process and keep him focused and active. In the same time, the digital content should promote interactivity between teacher and learners, as well as peer-to-peer interactivity.

**Box 2:** Ways to promote engagement and interactivity through digital learning materials

- discussions, surveys, brainstorming sessions;
- problem-solving questions;
- case studies to be interpreted;
- tests and quizzes;
- group assignments;
- role-playing games.

# PRINCIPLE 08

Digital learning materials should stimulate the learner's creativity

**Digital learning materials should stimulate the learner's creativity:** The activities integrated in the learning materials enhance the learner's sense of creativity. Viewing at problem or situation from different perspectives, thinking outside the box and triggering emotional development should be at the core of the learning materials.

**Box 3:** Ways to stimulate creativity through digital learning materials

- Activities that encourage independent work.
- Problems or situations that have several solution alternatives.
- Images, graphics or videos to be interpreted
- Questions or discussion topics as:
  - o What do you think of, when you hear the word ...?
  - o How would you have acted if you were in his or her place....?
  - o What would you suggest in this case?
  - o Could there be a more efficient way to obtain the same result?
  - o For what other purpose could it be used?

03

# FOSTERING THE LEARNER-CENTRED APPROACH: THE PERSONA FORM AND THE LEARNER'S JOURNEY MATERIALS

3.1. UNDERSTANDING THE LEARNER'S PROFILE:  
THE PERSONA FORM

3.2. THE LEARNING JOURNEY

# 3.1

When it comes to digital learning materials suitable for all learning places and modalities, it is crucial to priory understand the learner so we can put him/her into the heart of the learning process. There are several contextualizing aspects to be taken into consideration in order provide a better understanding of the learner e.g:

- **Age group:** in case of teen learners, the content should be characterized by a simple phrase structure, continuous reference to everyday activities/ situations, entertaining ways of learning and testing, such as games, contests etc.
- **Type of education:** in vocational education, the designing of digital content should aim the consolidation of professional skills and preparation for the labour market. Insertion of examples, case studies, practical assignments, video tutorials etc. helps foster these aspects.
- **Qualification:** the digital content for high-qualified individuals can not be the same as for others with a lower level of qualification. By properly knowing your audience, you will set realistic expectations and therefore, you will make sure that the learning process is customized and effective.

## APPROACH 1

### UNDERSTANDING THE LEARNER'S PROFILE: THE PERSONA FORM

Other elements to be considered could be the learner's needs, interests, expectations, technology skills etc. These elements and many others that characterize the audience could be explored by implementing the "Persona" form, a tool for a customized digital content that helps the developer adapt the digital learning material to the learners' characteristics and needs.

# 3.2

The use of learning materials where and when it is possible and more convenient for the target-audience is one of the main advantages of digital learning materials and one of the main pillars of blended learning. That is why we recommend an approach called “the learning journey”, by priory understanding and designing the typical day of the target audience.

How can we elaborate a “learning journey”?

One of the ways to elaborate the “learning journey” is by carrying out a survey with our target audience, including direct and indirect questions, where we can ask them about their everyday activities and tasks, the time spent on the computer or phone, the time they start to study etc.

## APPROACH 2

THE LEARNING JOURNEY

### **Box 4:** Types of questions to be asked for designing the learning journey

- Could you list of your everyday activities?
- How much time do you spend on computer/laptop or phone?
- At what time do you usually start studying?
- How much time do you spend studying at home?
- What are your responsibilities/tasks at home?
- If i would send you in real time a video anticipating the next lesson, what would be the right time for you to watch it?
- Do you use a mean of transport to travel to school? If so, how many minutes do you travel?

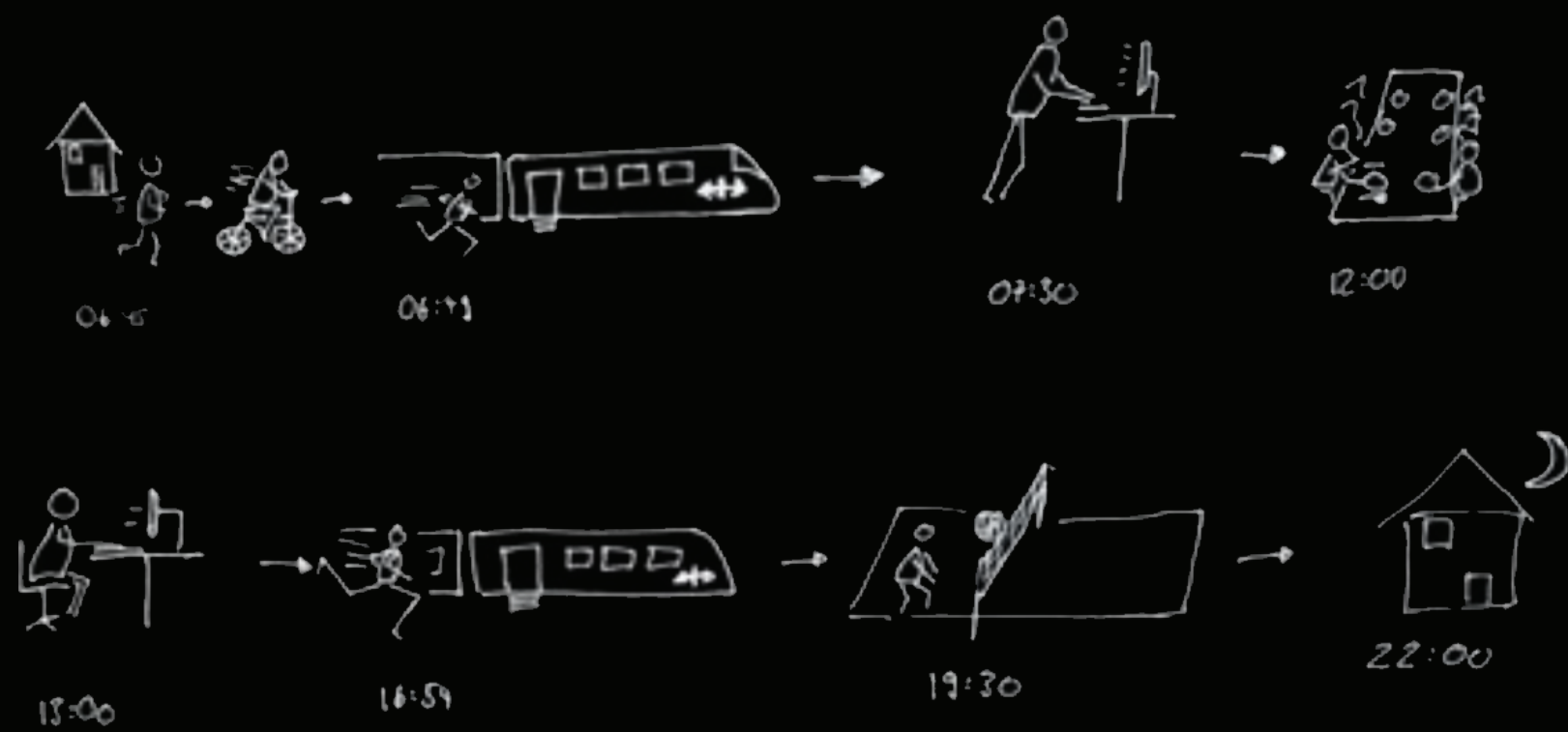


Figure 3: Example of a learner's journey design



Figure 4: Integration of the learning process into the learner's journey

# 3.2

We can use the answers to sketch the typical learner's journey that will help us understand how to adapt the digital learning materials to the learner's day and activities and how to increase the chance for each learner to show interest on these materials.

## APPROACH 2

### THE LEARNING JOURNEY

**Box 5:** Examples on how designing the students' learning journey could be helpful for the learning process

- A. The teacher knows that a part of her students travel everyday for around 10 minutes to get to school, so he decides to include in the digital content a 5 minute video on electricity and suggests the students to watch it together in the bus so they can discuss it during the class.
- B. Knowing that most of her students are at home at the evening, the teacher tells her them that she will post a new quiz on Kahoot at 8 PM, as part of the formative assessment.

04

FROM TOPIC TO DIGITAL  
CONTENT: A STEP BY STEP  
APPROACH FOR THE DEVELOPERS  
OF LEARNING MATERIALS



**STEP 1**

Fragmentize the topic into subtopics

**STEP 2**

Formulate meaningful learning objectives

**STEP 3**

Gather relevant up-to-date information

**STEP 4**

Elaborate an effective objective-based content

**STEP 5**

Integrate various elements into the learning material to enhance engagement, interactivity and flexibility in terms of place and learning modality.

**STEP 6**

Validate, test, improve and update

# STEP 1

## FRAGMENTIZE THE TOPIC INTO SUBTOPICS

- Have a thorough understanding of the main topic by asking yourself What is the topic about? What is it related to?
- Make a list of the main concepts/elements thinking of them as the basis of subtopics
- Elaborate meaningful subtopics. The more interesting and attractive the subtopic will be, the more motivated the learner will be to explore the digital material.

# STEP 2

## FORMULATE MEANINGFUL LEARNING OBJECTIVES

- In case the objectives are already given, make sure you have a full understanding of them before starting to work on the content.
- In case the objectives should be elaborated, keep in mind the main topic and goal of the learning process: that is where the objectives should derive from.
- While formulating the objectives, them by making sure they:
  - o match the curriculum framework;
  - o are specific, measurable and achievable;
  - o support the learners to be take responsibilities, to be socially active and collaborative, to be better prepared for the integration in the labor market etc..
- Carefully indicate the activity, the object and, when necessary, the conditions and requirements.
- Customize the learning objectives to your target-audience profile, interest and needs.
- Elaborate the learning objectives by keeping in mind that they represent the element that determines the content.
- Follow a successive approach: one level must be mastered before the next level can be reached.

# STEP 3

## GATHER RELEVANT UP-TO-DATE INFORMATION

This step is crucial in case the learning material is not available (textbook, additional certified materials etc.), but is also necessary to be considered when materials are available since they often need to be completed with other information and frequently updated. These are some of the main criteria to be taken into account in terms of information reliability:

- To understand the aim of the source and the target-audience, opt for sources that give information on specific domains and for interested individuals and avoiding commercial, propagandistic and community-wide sources.
- To check the authors and credibility of the source, concentrating on expert authors, well-known institutions/organisations (governmental institutions, research centres, universities, foundations etc.) and avoiding publications for commercial or personal purpose and anonymous authors.
- To make sure information is accurate, opt for materials based on researches and verifiable data or facts.
- To be up-to-dated with the domain's latest achievements, concentrate on recent publications.
- To offer objective information, avoid sources and materials based on personal opinions.
- While navigating on the internet, consider also the website's look. A poorly organized website, grammar errors etc. are all red flags.

# STEP 4

## ELABORATE AN EFFECTIVE OBJECTIVE-BASED CONTENT

This step is crucial in case the learning material is not available (textbook, additional certified materials etc.), but is also necessary to be considered when materials are available since they often need to be completed with other information and frequently updated. These are some of the main criteria to be taken into account in terms of information reliability:

- Make sure to start with content elaboration after formulating the learning objectives: the content should fit the objectives.
- Identify all the content's components relevant to the topic: concepts, facts, laws, principles, innovations etc.
- Compare and crossover the content to the objectives.
- Remember that the process of matching the content to the learning objectives is a back-and-forth process: you have to go over and over them until you make sure all objectives are integrated.

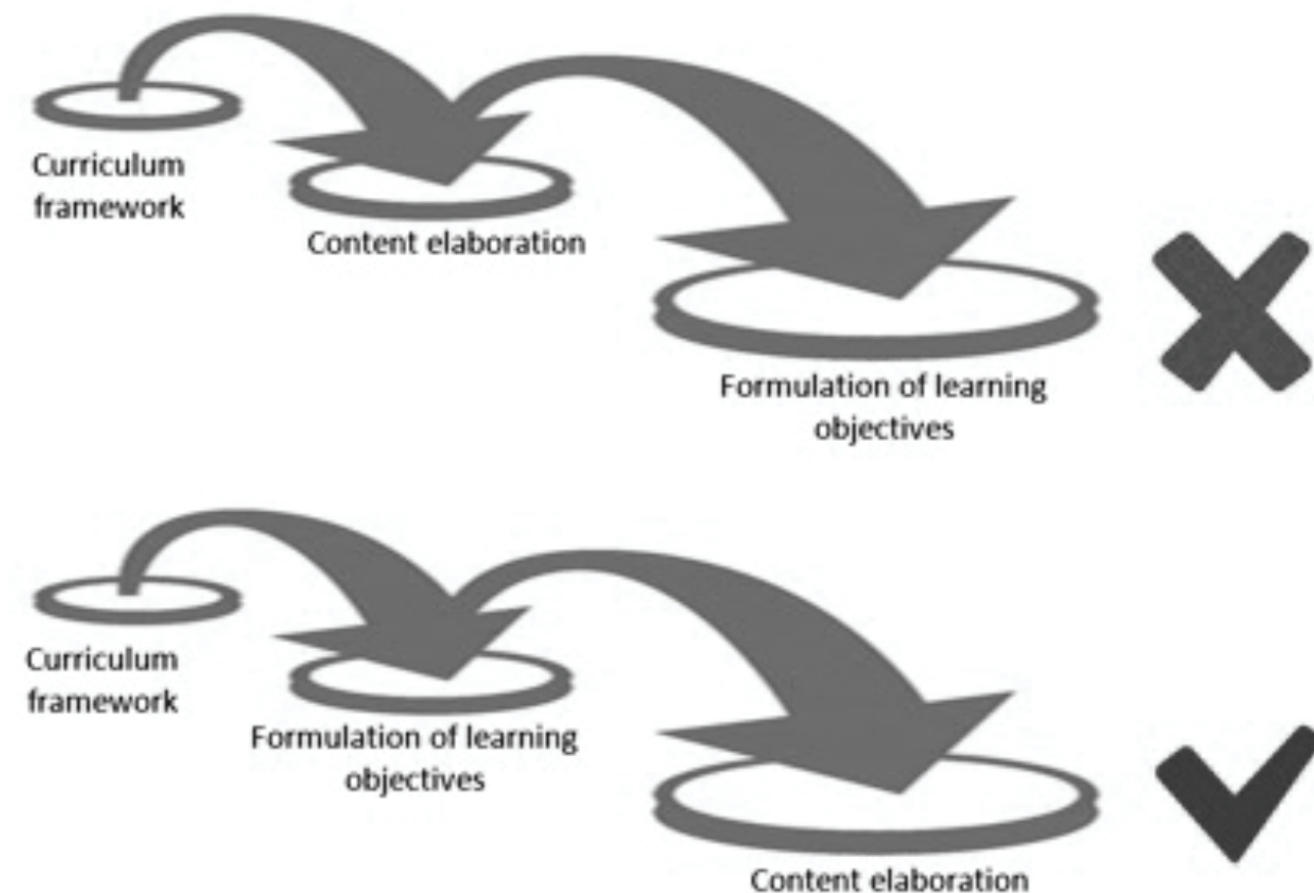


Figure 3: The correct way to elaborate the content

# STEP 5

INTEGRATE VARIOUS ELEMENTS INTO THE LEARNING MATERIAL TO ENHANCE ENGAGEMENT, INTERACTIVITY AND FLEXIBILITY IN TERMS OF PLACE AND LEARNING MODALITY.

- Use clear, easy-to-understand concepts, assignments, animations etc.
- Opt for a variety of integrated elements (text, videos, photos, animations, graphs, assignments, quizzes, role-playing games, tests etc.): the richer the content will be, the better it will respond to learning process and objectives.
- Promote engagement and interactivity through discussions, surveys, tests, team work etc. keeping in mind that learner should feel as engaged and active at home as in class, on asynchronous modality as on synchronous, during timed activities or at his own pace.

# STEP 6

VALIDATE, TEST, IMPROVE AND  
UPDATE

- Validate the learning materials with your peers and possibly with your students before starting with the digitalization process.
- Reflect suggestions to improve the learning material.
- After digitalization, test the materials during a class and ask students to work independently with the digital learning material.
- Continue improving the digital learning material through the platform and update it frequently to reflect the domain's dynamics.

**05**

**IMPLEMENTATION OF WAIPA  
SCHEME FOR AN EFFECTIVE  
AND INTERACTIVE DIGITAL  
LEARNING MATERIAL**

It is highly recommended to work for the preparation of a digital learning material based on a certain structure. The benefit of using a structure is double for it helps:

- the developer of the material:
  - o to properly organize the material;
  - o to make sure the didactic principles are met and the interactive approach is achieved;
  - o to simplify the right insertion of learning activities such as videos, questions, tests, assignments, etc., so it help us decide what goes where
- the learner:
  - o to be better oriented while working indipendently with the learning materials;
  - o to feel how the learning process is being build up.

**W**elcome

**A**ctivate the existing knowledge

**I**nform

**P**rocess and transfer

**A**nalyse

The main advantages of using WAIPA structure while designing the script for digital learning materials:

- o The main advantages of using WAIPA structure while designing the script for digital learning materials.
- o Flexibility: it can be adapted to all kinds of learning materials, subjects, topics, objectives, developer's point of views and also to all kinds of learning places and modalities.
- o Fluidity and coherence: it makes possible to shape a gradual learning process, starting with a light and attractive element up to the analysis that proves if the learning objectives were reached.
- o Interactivity and attractiveness: the specifics of each part of the structure makes possible to use a wide variety of activities, tools, media etc. that stimulate interactivity and make the learning material more captivating.

# MAIN USE

WAIPA

# W

## elcome

This part of the script for the digital learning material should be considered as a smooth introduction to the body of the learning material. It serves as an ice-breaker and as a way to capture the learner's attention, to motivate him/her and to encourage him/her to share his/her opinion or point of view before being immersed in the new information. A well-thought welcome element is a great start to an effective learning process.

### **Box 6:** Elements to be used in the “Welcome” phase

- Meaningful photo/image or video
- Inspiring content-related quote
- Interactive poll
- “Light” discussion

# A Activate the existing knowledge

This second step in the WAIPA structure helps us understand if prior information/concepts are well-absorbed and also ensures a fluid shift from the already given information to the new one.

**Box 7:** Elements to be used in the “Activate the existing knowledge” phase

- Set of questions
- Discussion
- Brainstorming session
- Graphic organizer
- Image/video to interpret
- Interactive table
- Short assignment
- Short test

# I&P Inform, process and transfer

These two components walk together in the WAIPA structure, representing the body of the learning material. The information is then transferred to the learner as a task.

## **Box 8:** Elements to be used in the “Inform” phase

- Text
- Images
- Videos
- Graphics
- Tables
- Examples etc

## **Box 9:** Elements to be used in the “Process and transfer” phase

- Individual assignment
- Group assignment
- Project etc.

# Analyse

This final part of the WAIPA structure aims to understand if the main objectives were achieved and if the learning process can be considered successful.

## **Box 10:** Elements to be used in the “Analyse” phase

- Synthetic/deductive question
- Discussion
- Mind map
- Interactive scheme
- Dilemma
- Case study etc.

