

**2022**  
**REPORT ON**



**VIRTUAL  
EDUCATION AND  
CO-CREATION  
TOOLBOX**

Definition of Platform  
requirements (Deliverable 3.1)



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General information	
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### About DCbox

DCbox “Digital Curator Training & Tool Box” works to create a new generation of European professionals working in the cultural heritage sector, equipped with a recognised, cross-cutting and high-level digital skillset.

The project is funded by the Erasmus+ programme of the European Union during the period November 2021 - May 2023

DCbox is implemented by:

- Università Politecnica delle Marche (Italy) - coordinator
- Sinergia Consulenze Srl (Italy)
- University of Cordoba (Spain)
- The Cyprus Institute (Cyprus)
- Universidade Lusófona/COFAC – Training and Cultural Animation Cooperative (Portugal)
- UNIMED – Mediterranean Universities Union (Italy)
- University of NIS (Serbia)

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## Executive Summary

The present deliverable “Virtual educators and co-creation toolbox: Definition of platform requirements” defines the platform requirements for the learning platform, with the aim to provide students with an empowering and interactive learning experience. This deliverable is a crucial step towards creating a conceptual structure and main functionalities for the platform, which will be closely related to the methodology set in PR2 for student training. This activity coordinated by SINERGIA, will involve the comparison of different education platform competitors and their offers to determine the best fit for our goals.

The focus of this document is also on the content structure of the online course, including its organization, multimedia components, and roles of the involved parties. In order to better illustrate our approach, it also provides an example of an area structure that could be implemented within the learning platform. By the present deliverable, the DCbox partnership has a plan for the platform's content structure and the tools required to deliver an engaging and interactive learning experience for the students piloting the course but also for other possible users.

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# 1. Platform pre-screening

To select the best LMS system for structuring online modules, a screening of the main platforms used for this purpose was carried out beforehand. In particular, parameters such as the available platforms, web browsers compatibility and the tools for managing content and subscriptions were evaluated to see which represented the best compromise in relation to the final aims of the DCbox project. A comparison with 2 of the best Learning Management Systems:

Absorb LMS	Adobe Learning Manager	Canvas LMS
<p>Customers:</p> <ul style="list-style-type: none"> <li>Large Enterprises (&gt;10,000)</li> <li>Non Profits</li> <li>Public Administrations</li> <li>Small/Medium Businesses</li> </ul> <p>Deployment:</p> <ul style="list-style-type: none"> <li>Mobile Application</li> <li>Software as a Service / Cloud</li> </ul> <p>Platforms:</p> <ul style="list-style-type: none"> <li>Linux</li> <li>Mac</li> <li>Windows</li> </ul> <p>Browsers:</p> <ul style="list-style-type: none"> <li>Apple Safari</li> <li>Google Chrome</li> <li>Internet Explorer</li> <li>Mozilla Firefox</li> </ul>	<p>Customers:</p> <ul style="list-style-type: none"> <li>Freelancers</li> <li>Large Enterprises (&gt;10,000)</li> <li>Small/Medium Businesses</li> </ul> <p>Deployment:</p> <ul style="list-style-type: none"> <li>Software as a Service / Cloud</li> </ul> <p>Platforms:</p> <ul style="list-style-type: none"> <li>Mac</li> <li>Windows</li> </ul> <p>Browsers:</p> <ul style="list-style-type: none"> <li>Apple Safari</li> <li>Google Chrome</li> <li>Internet Explorer</li> </ul>	<p>Customers:</p> <ul style="list-style-type: none"> <li>Academic</li> <li>Freelancers</li> <li>Large Enterprises (&gt;10,000)</li> <li>Non Profits</li> <li>Public Administrations</li> <li>Small/Medium Businesses</li> </ul> <p>Deployment:</p> <ul style="list-style-type: none"> <li>Mobile Application</li> <li>Self-Hosted Cloud-based</li> <li>Self-Hosted System</li> </ul> <p>Platforms:</p> <ul style="list-style-type: none"> <li>Linux</li> <li>Mac</li> <li>Windows</li> </ul> <p>Browsers:</p> <ul style="list-style-type: none"> <li>Apple Safari</li> <li>Google Chrome</li> <li>Internet Explorer</li> <li>Mozilla Firefox</li> </ul>
<p>Activity Grading:</p> <ul style="list-style-type: none"> <li>✓ Course History</li> <li>✓ Gradebook</li> <li>✓ Gradebook audit trail</li> <li>✓ Gradebook comments</li> <li>✓ Manual Grading ("Marking")</li> <li>— Multiple grading scales</li> </ul> <p>User Authentication:</p> <ul style="list-style-type: none"> <li>✓ Active Directory/LDAP Integration</li> <li>✓ Custom User login page</li> <li>✓ Manual Accounts</li> <li>✓ No login</li> <li>✓ SAML2/API Integration</li> <li>✓ Self-Registration</li> <li>✓ Self-Registration w. Admin Confirmation</li> </ul> <p>Course Categories:</p> <ul style="list-style-type: none"> <li>✓ Assign Courses to categories</li> <li>✓ Create new Categories</li> <li>✓ Manage Categories</li> <li>✓ Priced Categories (Bundle)</li> </ul>	<p>Activity Grading:</p> <ul style="list-style-type: none"> <li>✓ Course History</li> <li>✓ Gradebook</li> <li>— Gradebook audit trail</li> <li>— Gradebook comments</li> <li>— Manual Grading ("Marking")</li> <li>— Multiple grading scales</li> </ul> <p>User Authentication:</p> <ul style="list-style-type: none"> <li>✓ Active Directory/LDAP Integration</li> <li>✓ Custom User login page</li> <li>— Manual Accounts</li> <li>— No login</li> <li>✓ SAML2/API Integration</li> <li>— Self-Registration</li> <li>✓ Self-Registration w. Admin Confirmation</li> </ul> <p>Course Categories:</p> <ul style="list-style-type: none"> <li>✓ Assign Courses to categories</li> <li>✓ Create new Categories</li> <li>✓ Manage Categories</li> <li>— Priced Categories (Bundle)</li> </ul>	<p>Activity Grading:</p> <ul style="list-style-type: none"> <li>✓ Course History</li> <li>✓ Gradebook</li> <li>✓ Gradebook audit trail</li> <li>✓ Gradebook comments</li> <li>✓ Manual Grading ("Marking")</li> <li>✓ Multiple grading scales</li> </ul> <p>User Authentication:</p> <ul style="list-style-type: none"> <li>✓ Active Directory/LDAP Integration</li> <li>✓ Custom User login page</li> <li>✓ Manual Accounts</li> <li>✓ No login</li> <li>— Self-Registration</li> <li>✓ Self-Registration w. Admin Confirmation</li> </ul> <p>Course Categories:</p> <ul style="list-style-type: none"> <li>✓ Assign Courses to categories</li> <li>✓ Create new Categories</li> <li>✓ Manage Categories</li> <li>— Priced Categories (Bundle)</li> </ul>

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Absorb LMS	Adobe Learning Manager	Moodle <a href="#">Read More</a>
<p><b>Course Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Assignments Engine</li> <li>✓ Built-In Authoring Tool</li> <li>✓ Can reuse PPTs, PDFs, Videos</li> <li>✓ Changing Course default settings</li> <li>✓ Consume online video content</li> <li>✓ Course backup Options</li> <li>✓ Drag &amp; Drop Interactions</li> <li>✓ Learning Paths (Curriculums)</li> </ul> <hr/> <p><b>Customization:</b></p> <ul style="list-style-type: none"> <li>✓ Mobile Learning Support</li> <li>✓ Personalized views</li> </ul> <hr/> <p><b>User Enrollment:</b></p> <ul style="list-style-type: none"> <li>✓ Attendance Tracking</li> <li>✓ Automated Enrollment (based on User data)</li> <li>✓ Guest Access Settings</li> <li>✓ Manual Enrollment</li> <li>✓ Progress Tracking</li> <li>✓ Self-enrollment</li> </ul> <hr/> <p><b>System Reports:</b></p> <ul style="list-style-type: none"> <li>✓ Automatic email reports in predefined intervals</li> <li>✓ Custom reports generator</li> <li>✓ Email notification settings</li> <li>✓ Live Logs</li> </ul>	<p><b>Course Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Assignments Engine</li> <li>✓ Built-In Authoring Tool</li> <li>✓ Can reuse PPTs, PDFs, Videos</li> <li>✓ Changing Course default settings</li> <li>✓ Consume online video content</li> <li>✓ Course backup Options</li> <li>✓ Drag &amp; Drop Interactions</li> <li>✓ Learning Paths (Curriculums)</li> </ul> <hr/> <p><b>Customization:</b></p> <ul style="list-style-type: none"> <li>✓ Mobile Learning Support</li> <li>✓ Personalized views</li> </ul> <hr/> <p><b>User Enrollment:</b></p> <ul style="list-style-type: none"> <li>✓ Attendance Tracking</li> <li>✓ Automated Enrollment (based on User data)</li> <li>✓ Guest Access Settings</li> <li>✓ Manual Enrollment</li> <li>✓ Progress Tracking</li> <li>✓ Self-enrollment</li> </ul> <hr/> <p><b>System Reports:</b></p> <ul style="list-style-type: none"> <li>✓ Automatic email reports in predefined intervals</li> <li>✓ Custom reports generator</li> <li>✓ Email notification settings</li> <li>✓ Live Logs</li> </ul>	<p><b>Course Creation:</b></p> <ul style="list-style-type: none"> <li>✓ Assignments Engine</li> <li>✓ Built-In Authoring Tool</li> <li>✓ Can reuse PPTs, PDFs, Videos</li> <li>✓ Changing Course default settings</li> <li>✓ Consume online video content</li> <li>✓ Course backup Options</li> <li>✓ Drag &amp; Drop Interactions</li> <li>✓ Learning Paths (Curriculums)</li> </ul> <hr/> <p><b>Customization:</b></p> <ul style="list-style-type: none"> <li>✓ Mobile Learning Support</li> <li>✓ Personalized views</li> </ul> <hr/> <p><b>User Enrollment:</b></p> <ul style="list-style-type: none"> <li>✓ Attendance Tracking</li> <li>✓ Automated Enrollment (based on User data)</li> <li>✓ Guest Access Settings</li> <li>✓ Manual Enrollment</li> <li>✓ Progress Tracking</li> <li>✓ Self-enrollment</li> </ul> <hr/> <p><b>System Reports:</b></p> <ul style="list-style-type: none"> <li>✓ Automatic email reports in predefined intervals</li> <li>✓ Custom reports generator</li> <li>✓ Email notification settings</li> <li>✓ Live Logs</li> </ul>

Moodle is a learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalised learning environments, granting important benefits to students and teachers (easy access, connection, uploading of content, quizzes and activities). It was considered the best solution: the most important competitors (Absorb LMS, Adobe Learning Manager) don't have all the features that Moodle can guarantee. In addition, some partners are already used to Moodle features and its management system, this consideration lets us envisage a smother workflow for the learning modules implementation.

Moreover, on the market is classified as a game changer, considering the growth rate that is much higher than the market average. This is because Moodle is actively investing in growth.



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## 2. Platform Requirements

In the the 4.0 version, released in May 2022, different aspects were implemented such as: improved navigation, better experience, powerful reporting, quiz, collapsible content. There's also a mobile version that can be accessed through app.


**Standard Moodle**

Install Moodle on your own server (requires a web server with PHP and a database).

Latest release  
Obtaining Moodle via Git  
Development releases


**Extend Moodle**


Browse our extensive Moodle plugins directory for extra activities, blocks, themes and more.



**Moodle Mobile**

Access learning at a touch of a button, even when offline with our Moodle Mobile app. Available for Android and iOS.





**moodle**downloads

Freedom to learn.

Moodle is open source under the GPL license. Everything we produce is available for you to download and use for free.

Check out our latest release:

[MOODLE 4.0.4+](#)

Regarding this system, the possibility of using the “Learn” platform made available by UNIVPM with a Moodle license was also evaluated, as it was already up and running. However, this solution requires the creation of ad-hoc credentials within the institution for each new user, making access management more complex. So, it was eventually decided to buy a domain and associate it to DCbox (dcbox.moodle.edu). The Moodle will be on for at least 5-years.

Some of the features of Moodle that constitute a requirement for the DCbox platform are listed below.

### 2.1 User Management

The users have the possibility to self-enrol to the courses, with the option of manual enrol for different types of permission.

#### Enrolment methods

Name	Users	Up/Down	Edit
Manual enrolments	1	↓	🗑️ 👁️ 👤 ⚙️
Guest access	0	↑ ↓	🗑️ 👁️ ⚙️
Self enrolment (Student)	2	↑	🗑️ 👁️ ⚙️

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### Log in to Moodle

Username or email

Password

Log in

Lost password?

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Is this your first time here?

For full access to this site, you first need to create an account.

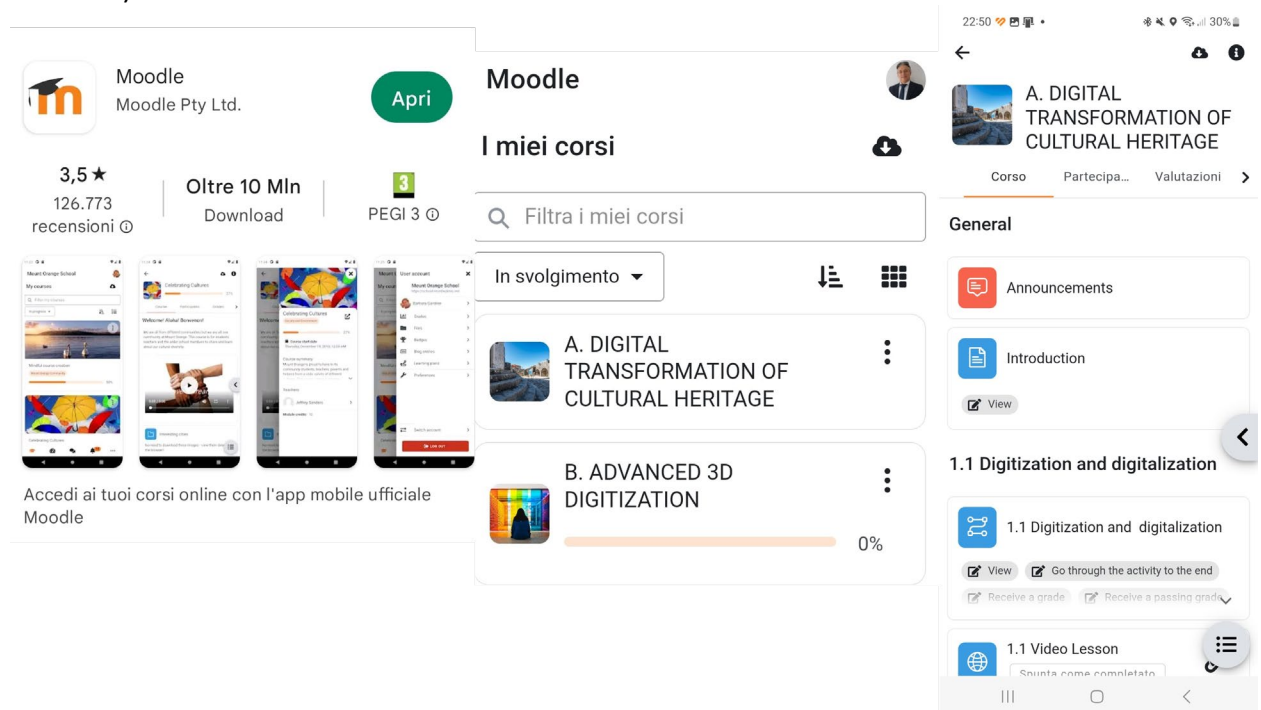
Create new account

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Cookies notice

## 2.2 Mobile app

The course and the management tools can be used via smartphone and tablet (students and teachers).



## 2.3 Course Management

The system provides different types “activities” to match the needs of the course, with a comprehensive reporting system of the students attendance.



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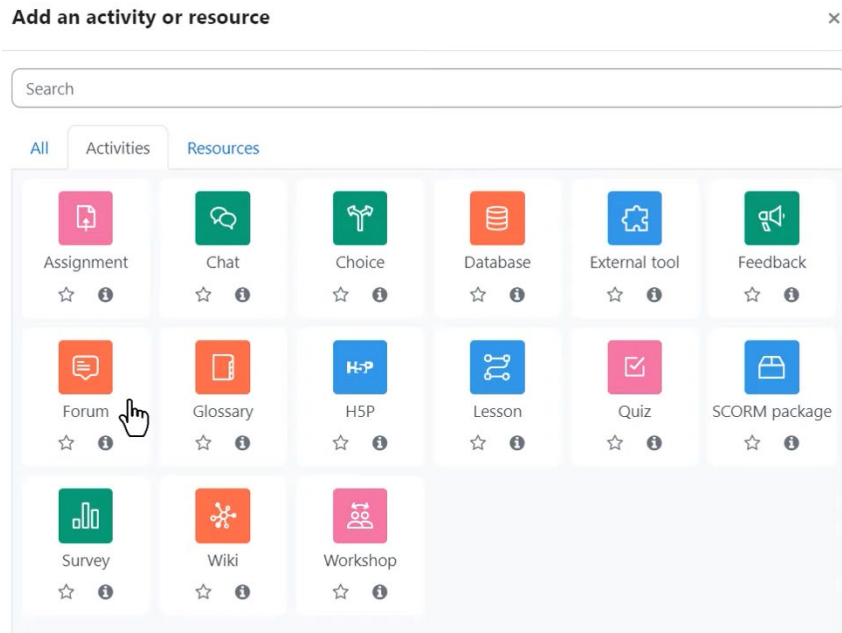


Figure 1 Activities types

## Logs

A. DIGITAL TRANSFORMATION OF CULTURAL HERITAGE | All participants | All days

All activities | All actions | All sources | All events

Get these logs

1 2 3 4 5 »

Time	User full name	Affected user	Event context	Component	Event name	Description	Origin	IP address
5 December 2022, 4:40:37 PM	System Administrator	-	Course: A. DIGITAL TRANSFORMATION OF CULTURAL HERITAGE	System	User list viewed	The user with id '2' viewed the list of users in the course with id '7'.	web	79.2.170.72
5 December 2022, 4:40:22 PM	System Administrator	-	Course: A. DIGITAL TRANSFORMATION OF CULTURAL HERITAGE	System	Course viewed	The user with id '2' viewed the course with id '7'.	web	79.2.170.72
5 December 2022, 4:16:36 PM	System Administrator	-	Course: A. DIGITAL TRANSFORMATION OF CULTURAL HERITAGE	Activity report	Activity report viewed	The user with id '2' viewed the outline activity report for the course with id '7'.	web	79.2.170.72
5 December 2022, 4:15:13 PM	System Administrator	-	Course: A. DIGITAL TRANSFORMATION OF CULTURAL HERITAGE	Logs	Log report viewed	The user with id '2' viewed the log report for the course with id '7'.	web	79.2.170.72

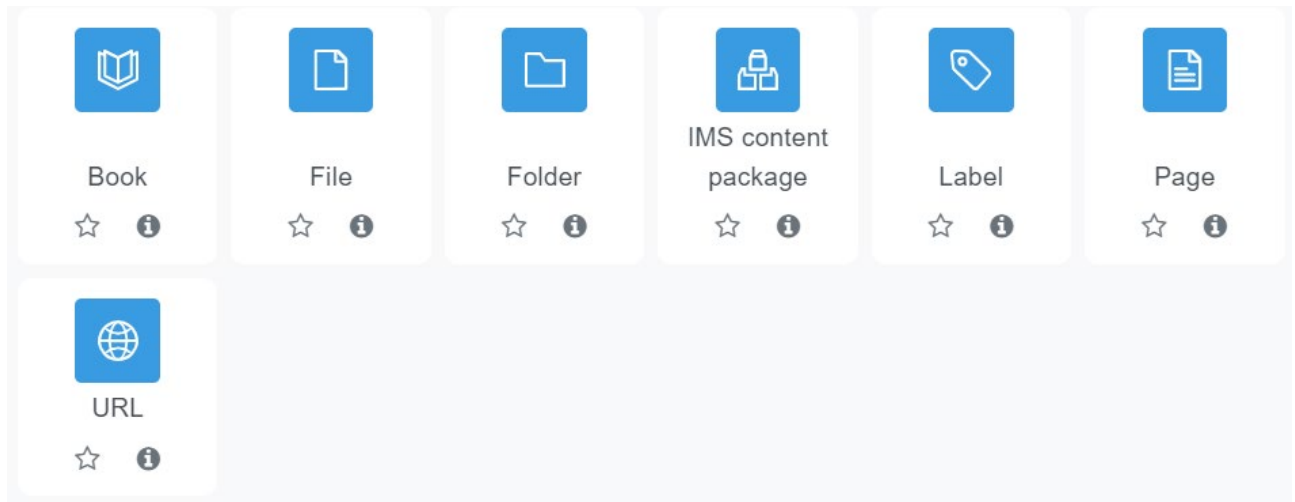
Download table data as: Comma separated values (.csv) | Download

Comma separated values (.csv)  
 Microsoft Excel (.xlsx)  
 HTML table  
 Javascript Object Notation (.json)  
 OpenDocument (.ods)  
 Portable Document Format (.pdf)

	A	B	C	D	E	F	G	H	I	J
1	First name	Surname	ID number	Institution	Department	Email address	Lesson: [Deletion in pr	Lesson: 1.1 Digitiza	Course total (Real)	Last downloaded from this course
2	Gianalberto	Cecchini				gcecchini@sinergia.it	-	-	-	1670255159
3	Ale	Ivanova				oivanova@sinergia.it	-	-	-	1670255159
4	Ale	Ivanova				marketing@sinergia.it	-	100	100	1670255159

The system should allow: to share presentations given in class, to include a mini website as a course resource, to provide draft files of software programs so students can edit and submit them for assessment, Etc.

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### 3. LMS structure

The main course will be divided in 4 areas:

- Area A, DIGITAL TRANSFORMATION OF CULTURAL HERITAGE
- Area B, ADVANCED 3D DIGITIZATION
- Area C, POLICIES AND DIGITAL DATA PRESERVATION
- Area D, DIGITAL ACCESS: UNIVERSAL DESIGN AND VIRTUAL EXPERIENCES

In this way, it will be easier tracking the KPI.

Each area will be made up of several sections, which will correspond to **lessons of the learning modules grid**:

<b>Area A</b>	<b>DIGITAL TRANSFORMATION OF CULTURAL HERITAGE</b>
Module 1	Digital transformation of CH
	<i>Lesson 1.1</i> Digitization and digitalization <i>Lesson 1.2</i> Digital Museology and Museography <i>Lesson 1.3</i> Digital Humanities <i>Lesson 1.4</i> Digital curator's role <i>Lesson 1.5</i> Storytelling for CH Quiz Module 1
<b>Area B</b>	<b>ADVANCED 3D DIGITIZATION</b>
Module2	Digitization
	<i>lesson 2.1</i> Range-based digitization <i>lesson 2.2</i> Range-based survey techniques and range maps alignment

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- Activity 2.3* Point clouds alignment
- Lesson 2.4* Image-based digitization
- Lesson 2.5* Image-based survey techniques
- Lesson 2.6* Digital photogrammetry workflow
- Lesson 2.7* High resolution images production
- Lesson 2.8* Projects overview: HD paintings

Quiz module 2

Module  
3

3D modeling and data implementation

- Lesson 3.1* 3d modelling and data optimisation
- Lesson 3.2* Projects overview: direct modelling
- Lesson 3.3* Projects overview: reality-based modelling
- Lesson 3.4* Virtual restoration and 3D model Reconstruction
- Activity 3.5* 3D model reconstruction

Quiz module 3

**Area C**

**POLICIES AND DIGITAL DATA PRESERVATION**

Module  
4

Policies rules and lycensing

- Lesson 4.1* Excursus over the last decades
- Lesson 4.2* CH laws
- Lesson 4.3* DCH Laws between Public institutions and private businesses
- Lesson 4.4* ISO and EN standards
- Lesson 4.5* Open File Formats: images, videos, sounds, Point Clouds, Mesh

Quiz module 4

Module  
5

Digital data preservation

- Lesson 5.1* Digital Cataloguing strategies for CH
- Activity 5.2* Digital cataloguing tools and techniques
- Lesson 5.3* Database design
- Lesson 5.4* Data models (ER, EER)
- Lesson 5.5* Database development
- Lesson 5.6* Information management methodologies
- Lesson 5.7* Planning tools

Quiz module 5

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<b>Area D</b>	<b>DIGITAL ACCESS: UNIVERSAL DESIGN AND VIRTUAL EXPERIENCES</b>
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Module 6	Communication
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- Lesson 6.1* managing of website
- Lesson 6.2* virtual exhibitions
- Lesson 6.3* video production and podcasting for museums
- Lesson 6.4* digital accessibility and inclusion
- Activity 6.5* making of

Quiz module 6
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Module 7	Virtualization
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- Lesson 7.1* Virtual reality
- Lesson 7.2* Augmented & Mixed Reality
- Lesson 7.3* Applications on the web
- Lesson 7.4* Mobile applications
- Lesson 7.5* Wearable devices applications
- Activity 7.6* Mobile App developing

Quiz module 7
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Module 8	New frontiers in CH
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- Lesson 8.1* Introduction to AI
- Lesson 8.2* Machine learning
- Lesson 8.3* Deep learning
- Lesson 8.4* The role of AI in the Heritage Sciences dimension
- Lesson 8.5* Tracking of user experiences for virtual/digital museums
- Lesson 8.6* ICT for tracking behaviour
- Activity 8.7* evaluation questionnaires

Quiz module 8
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Each section will have several **elements** such as a video, a link, some text, an image or a combination of them.

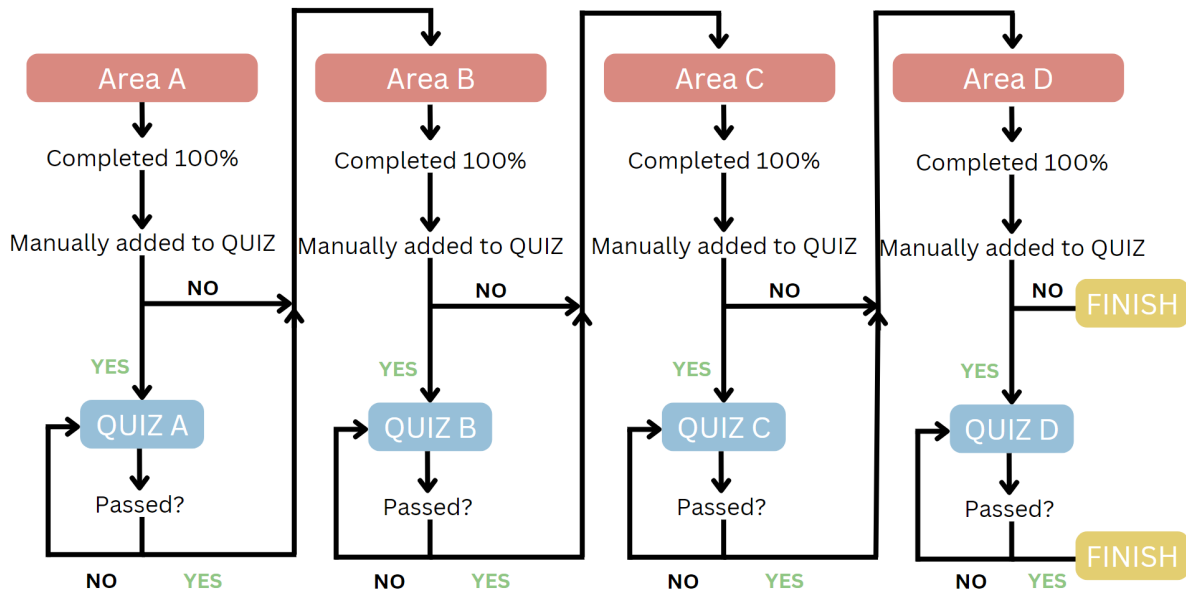
### Structure

The logic of the path:

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- If a student has completed the course, he/she will automatically receive a passcode to self-enrolment to the next course.
- If a student was manually added to a quiz-course, he/she will be able to answer to the questions and to receive a grade.

Schematic example of the path:



## Multimedia

Site upload limit: 300 MB.

- Video size limit: 300 MB.
- Image size limit: 300 MB, but it is strongly recommended to optimize the image as a general best practice (large dimensions slow down the image loading).

## Roles

### Students

Students will be able to create new accounts freely.

The platform will have the possibility of self-enrolment in the courses (A, B, C, D).

Some of the students will be manually added to the quiz area.

### Teachers

Each area will explicitly show the teachers who participated at the creation of the content. To ensure a bond with the students, the platform will have *at least* the following fields:

- City/town,
- Description – some ideas:
  - What do you teach at university?
  - What are your interests in life?
  - Do you have a favourite quote? Which one? Why do you like it?

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- User picture.

#### 4. An example of an area structure: Digital transformation of cultural heritage

##### General

A general section with:

- Announcements: can be used by teachers to start discussions before starting the course
- Introduction to the area: a table of content and specific competences description, if necessary, it might include a short introduction video (1-2 min). Main characteristics of this element:
  - Text (normal, bold, italic),
  - Bulleted and numbered list,
  - Add a link to the text,
  - Add image and media (max 300 MB)

##### Digitization and digitalization

A specific section with possibility to:

- Add an element with following characteristics:
  - Text (normal, bold, italic),
  - Bulleted and numbered list,
  - Add a link to the text,
  - Add image and media (max 300 MB)
- Add a video from a link (ex. YouTube video)
- Add a short quiz (of 1-3 questions) with the purpose of make students think before going to the next element/section.

##### Digital Museology and Museography

A specific section with possibility to:

- Add an element with following characteristics:
  - Text (normal, bold, italic),
  - Bulleted and numbered list,
  - Add a link to the text,
  - Add image and media (max 300 MB)
- Add a video from a link (ex. YouTube video)
- Add a short quiz (of 1-3 questions) with the purpose of make students think before going to the next element/section.

##### Digital Humanities

A specific section with possibility to:

- Add an element with following characteristics:
  - Text (normal, bold, italic),
  - Bulleted and numbered list,

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- Add a link to the text,
- Add image and media (max 300 MB)
- Add a video from a link (ex. YouTube video)
- Add a short quiz (of 1-3 questions) with the purpose of make students think before going to the next element/section.

### Digital curator's role

A specific section with possibility to:

- Add an element with following characteristics:
  - Text (normal, bold, italic),
  - Bulleted and numbered list,
  - Add a link to the text,
  - Add image and media (max 300 MB)
- Add a video from a link (ex. YouTube video)
- Add a short quiz (of 1-3 questions) with the purpose of make students think before going to the next element/section.

### Storytelling for CH

A specific section with possibility to:

- Add an element with following characteristics:
  - Text (normal, bold, italic),
  - Bulleted and numbered list,
  - Add a link to the text,
  - Add image and media (max 300 MB)
- Add a video from a link (ex. YouTube video)
- Add a short quiz (of 1-3 questions) with the purpose of make students think before going to the next element/section.



**DC**  
**BOX**

DIGITAL CURATOR  
TRAINING TOOL BOX

