



INTELLECTUAL OUTPUT 3

Task O3-A2. Pilot CircularBIM Course implementation: environment test and technical improvements



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Universitatea
Transilvania
din Braşov



ROMANIA
GREEN
BUILDING
COUNCIL





CONTENT

1. DESCRIPTION OF THE TASK	3
2. MOOC PILOT COURSE EXPERIENCE.....	4
2.1. STARTING POINT	4
2.2. CONTENT OF THE PILOT COURSES: MOOC and OER	8
3. PILOT COURSES	14
3.1. PILOT COURSE IN SPAIN (USE)	14
3.2. PILOT COURSE IN PORTUGAL (UMINHO)	17
3.3. PILOT COURSE IN RUMANIA (UNITBV)	18
4. QUESTIONNAIRE	22
4.1. QUESTIONNAIRE RESULTS	31
5. CONCLUSIONS.....	34
6. IMPACT	34



1. DESCRIPTION OF THE TASK

This report is included in the IO3 CircularBIM OPEN EDUCATIONAL RESOURCE (OER) which is based on the implementation in technical courses and trainings on specialisation focused on the CircularBIM project. Partners of the Project have implemented pilot courses and used current courses based on the products of the project, which was also served as evaluating products for possible improvement before the end of the project.

The feedback obtained from experts during these courses and events was very useful to the improvement of the products of the project, mainly the Production of the OER, MOOC and pilot courses, and the quality assessment of technical content and pedagogical approach and IT quality assessment of ICT Based.

The beta versions of those products were shown to experts and teachers, to be checked and used in during or after the courses. It was necessary because beta versions to correct them, as well as sometimes the trainings are carrying out in facilities where there is not online connection.

Finally, the consortium has also scheduled courses, trainings, and other events (workshops, meetings, seminars, etc.) beyond the end of the project to guarantee the sustainability of the project.

All the information about the project and more technical documentation is available in the following url:

- CircularBIM project web: www.circularbim.eu



2. MOOC PILOT COURSE EXPERIENCE

2.1. STARTING POINT

The MOOC created for the CircularBIM project is based on previous reports, considering the main aspects to contribute to overcome the barriers related to the topic of this project. These basic contents were sent to all partners who commented on any additions or changes to be made. The content of the MOOC is mainly based on manuals accompanied by supporting material such as videos, articles, legislation and lectures.

The MOOC is available at: <https://class.circularbim.eu/>

The course was attended by a total of 70 students related to the construction sector. The people enrolled in these courses were from Spain, Portugal and Romania. The MOOC can be used in all languages of the project partners and in English.

Below you can see the different courses created in the MOOC, one in each language of the consortium partners, and one in English.

Discover Our Programs

REGISTER

CircularBIM. METODOLOGII ȘI PROCEDURI DE CONȘTRUCȚIE BAZATE PE CONCEPTE DE ECONOMIE CIRCULARĂ PRIN UTILIZAREA BIM (ÎN LIMBA ROMÂNĂ)

CircularBIM. METODOLOGÍAS Y PROCEDIMIENTOS DE CONSTRUCCIÓN BASADOS EN CONCEPTOS DE ECONOMÍA CIRCULAR MEDIANTE EL USO DE BIM (ESPAÑOL)

CircularBIM. METODOLOGIAS E PROCEDIMENTOS DE CONSTRUÇÃO BASEADOS EM CONCEITOS DE ECONOMIA CIRCULAR, UTILIZANDO BIM (PORTUGUESE)

CircularBIM. CONSTRUCTION METHODOLOGIES AND PROCEDURES BASED ON CIRCULAR ECONOMY CONCEPTS BY USING BIM (ENGLISH)

Figure 1: Different courses available at the MOOC

You can see the "REGISTER" button at the top. By clicking on this button, the user is redirected to the registration form available at the following link: https://docs.google.com/forms/d/e/1FAIpQLSduJZxotUACHRMnmDifGIICQ3UWvmcVgajhwsPo_mgixAF3A/viewform


Below are the screenshots of the registration form:



CircularBIM. Register for our free courses!

EDUCATIONAL PLATFORM FOCUSED ON ADVANCED STRATEGIES OF REINSTATEMENT OF BUILDING MATERIALS IN THE INDUSTRIAL VALUE CHAIN TO PROMOTE THE TRANSITION TO THE CIRCULAR ECONOMY THROUGH THE USE OF BIM LEARNING TECHNOLOGIES

2019-1-ES01-KA203-065962

 aeipiedra@gmail.com (no compartidos) [Cambiar de cuenta](#)



*Obligatorio

Name: *

Tu respuesta

Figure 2: Register form



Surname *

Tu respuesta

email: *

Tu respuesta

Country: *

Tu respuesta

Preferred language for the course(s): *

English

Spanish

Portuguese

Romanian

Figure 3: Register form



Study/work centre: *

Tu respuesta

Study/work centre address: *

Tu respuesta



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Enviar

Borrar formulario

Figure 4: Register form



2.2. CONTENT OF THE PILOT COURSES: MOOC and OER

As mentioned above, a MOOC has been created for the CircularBIM project. This MOOC is hosted within the OER: <https://circularbim.eu/es/oer/>

In the MOOC, learners can find the content they need for their training: the topics, related documents, videos related to the topics, etc. Below are some screenshots of the MOOC. We have selected the English language for the report. But in each of the courses, the topics can be found in the corresponding language.

The screenshot displays the MOOC interface. On the left is a navigation menu with categories like 'Dashboard', 'Site home', 'Site pages', 'Courses', and 'CircularBIM EN'. The 'CircularBIM EN' section is expanded to show 'Participants', 'Badges', 'Competencies', 'Grades', 'General', and 'Topic 1. Introduction'. Under 'Topic 1. Introduction', there is a sub-menu for 'Presentation of the topic 1.' which includes 'Video 1. Life Cycle Assessment (LCA) For Beginners', 'Video 2. What is BIM (Building Information Modeling)?', 'Video 3. What is Circular Economy? What is the dif...', 'Annex document 1. EU Regulation 305/2011', and other topics. The main content area shows a slide titled 'Presentation of the topic 1.' with a 'Mark as done' button. The slide features a central graphic of a circular puzzle with 'CircularBIM' in the center, surrounded by icons for BIM, sustainability, and construction. Text on the slide includes 'CONSTRUCTION METHODOLOGIES AND PROCEDURES BASED ON CIRCULAR ECONOMY CONCEPTS BY USING BIM' and 'CircularBIM'. Logos for 'Escuela Técnica Superior de Ingeniería de Edificación', 'Arditec', and 'Erasmus+' are visible. At the bottom of the slide, it says 'Página 1 de 25' and 'CTCV'.

Figure 5: Screen shot of the MOOC.



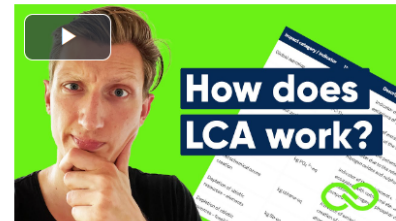
Dashboard / Courses / CircularBIM EN / Topic 1. Introduction / Video 1. Life Cycle Assessment (LCA) For Beginners

Navigation

- Dashboard
- Site home
- Site pages
- Courses
 - CircularBIM EN
 - Participants
 - Badges
 - Competencies
 - Grades
 - General
 - Topic 1. Introduction
 - Presentation of the topic 1.
 - Video 1. Life Cycle Assessment (LCA) For Beginners**
 - Video 2. What is BIM (Building Information Modeling)?
 - Video 3. What is Circular Economy? What is the dif...
 - Annex document 1. EU Regulation 305/2011
 - topic 2. Circular Economy for construction sector

Video 1. Life Cycle Assessment (LCA) For Beginners

Mark as done



Last modified: Thursday, 19 May 2022, 9:23 AM

◀ Presentation of the topic 1.

Jump to...

Video 2.1

Figure 6: Screen shot of the MOOC.



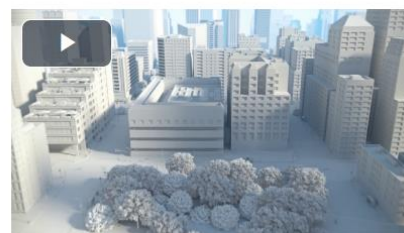
Dashboard / Courses / CircularBIM EN / Topic 1. Introduction / Video 2. What is BIM (Building Information Modeling)?

Navigation

- Dashboard
- Site home
- Site pages
- Courses
 - CircularBIM EN
 - Participants
 - Badges
 - Competencies
 - Grades
 - General
 - Topic 1. Introduction
 - Presentation of the topic 1.
 - Video 1. Life Cycle Assessment (LCA) For Beginners
 - Video 2. What is BIM (Building Information Modeling)?**
 - Video 3. What is Circular Economy? What is the dif...
 - Annex document 1. EU Regulation 305/2011
 - topic 2. Circular Economy for construction sector

Video 2. What is BIM (Building Information Modeling)?

Mark as done



Last modified: Thursday, 19 May 2022, 9:24 AM

◀ Video 1. Life Cycle Assessment (LCA) For Beginners

Jump to...

Video 3. What is Circular Economy? What is the difference from LCA?

Figure 7: Screen shot of the MOOC.



Dashboard / Courses / CircularBIM EN / Topic 1. Introduction / Video 3. What is Circular Economy? What is the dif...

Navigation

- Dashboard
- Site home
- Site pages
- Courses
 - CircularBIM EN
 - Participants
 - Badges
 - Competencies
 - Grades
 - General
 - Topic 1. Introduction
 - Presentation of the topic 1.
 - Video 1. Life Cycle Assessment (LCA) For Beginners
 - Video 2. What is BIM (Building Information Modeling)?
 - Video 3. What is Circular Economy? What is the dif...**
 - Annex document 1. EU Regulation 305/2011
 - topic 2. Circular Economy for construction sector
 - topic 3. Sustainability of building materials

Video 3. What is Circular Economy? What is the difference from Linear Economic Model?

Mark as done



Last modified: Thursday, 19 May 2022, 9:25 AM

◀ Video 2. What is BIM (Building Information Modeling)?

Jump to...

Annex document 1. EU Regulation 305/2011 ▶

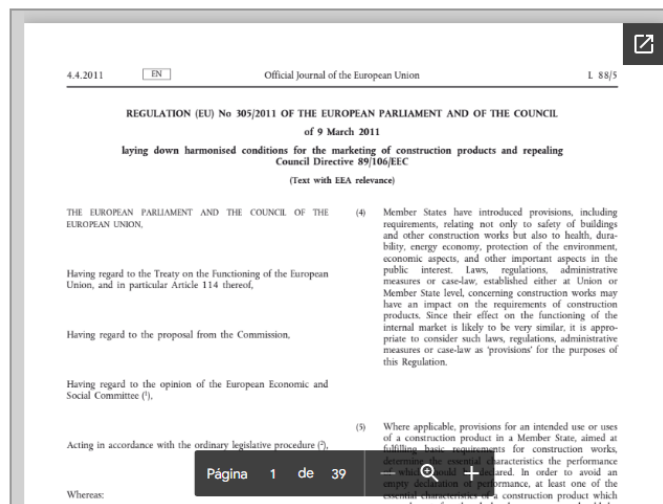
Figure 8: Screen shot of the MOOC.

Navigation

- Dashboard
- Site home
- Site pages
- Courses
 - CircularBIM EN
 - Participants
 - Badges
 - Competencies
 - Grades
 - General
 - Topic 1. Introduction
 - Presentation of the topic 1.
 - Video 1. Life Cycle Assessment (LCA) For Beginners
 - Video 2. What is BIM (Building Information Modeling)?
 - Video 3. What is Circular Economy? What is the dif...
 - Annex document 1. EU Regulation 305/2011**
 - topic 2. Circular Economy for construction sector
 - topic 3. Sustainability of building materials
 - Topic 4. Environmental indicators
 - TOPIC 5. Comparative study of construction process...
 - TOPIC 6. Construction and demolition waste

Annex document 1. EU Regulation 305/2011

Mark as done



Last modified: Monday, 23 May 2022, 3:43 PM

◀ Video 3. What is Circular Economy? What is the difference from Linear Economic Model?

Jump to...

Figure 9: Screen shot of the MOOC.



The contents of the different units of the course can be found below:

The screenshot displays the user interface of the MOOC. At the top, there is a breadcrumb trail: "Dashboard / Courses / CircularBIM EN" and a "Turn editing on" button. On the left, there are two main navigation sections: "Navigation" and "Administration".

Navigation:

- Dashboard
- Site home
- Site pages
- Courses
 - CircularBIM EN
 - Participants
 - Badges
 - Competencies
 - Grades
 - General
 - Topic 1. Introduction
 - topic 2. Circular Economy for construction sector
 - topic 3. Sustainability of building materials
 - Topic 4. Environmental indicators
 - TOPIC 5. Comparative study of construction process...
 - TOPIC 6. Construction and demolition waste
 - TOPIC 7. BIM technologies
 - EXTRA CONTENTS

Administration:

- Course administration
 - Edit settings

The main content area is titled "TOPIC 1. INTRODUCTION". It contains a list of items, each with a document icon and a "Mark as done" button:

- Presentation of the topic 1. (Mark as done)
- Video 1. Life Cycle Assessment (LCA) For Beginners (Mark as done)
- Video 2. What is BIM (Building Information Modeling)? (Mark as done)
- Video 3. What is Circular Economy? What is the difference from Linear Economic Model? (Mark as done)
- Annex document 1. EU Regulation 305/2011 (Mark as done)

Figure 10: Contents of the MOOC.



O3/A2. PILOT CIRCULARBIM COURSE IMPLEMENTATION: ENVIRONMENT TEST AND TECHNICAL IMPROVEMENTS

- ⚙️ Edit settings
 - 🔄 Course completion
 - > Users
 - 🔍 Filters
 - > Reports
 - ⚙️ Gradebook setup
 - > Badges
 - 📁 Backup
 - ↕️ Restore
 - ↕️ Import
 - 📄 Copy course
 - ↩️ Reset
 - > Question bank
 - 🛠️ Accessibility toolkit
- > Site administration
- Search in settings

TOPIC 2. CIRCULAR ECONOMY FOR CONSTRUCTION SECTOR

- 📄 Presentation of the topic 2.
Mark as done
- 📄 Video 1. Construction industry & Circular Economy
Mark as done
- 📄 Video 2. How the construction industry can apply circular economy principles
Mark as done
- 📄 Annex document 1. Circular economy in the building and construction sector: A scientific evolution analysis
Mark as done

TOPIC 3. SUSTAINABILITY OF BUILDING MATERIALS

- 📄 Presentation of the topic 3.
Mark as done
- 📄 Video 1. Exploring Green Building and the Future of Construction
Mark as done
- 📄 Video 2. What is sustainable Construction?
Mark as done
- 📄 Annex 1. Research on sustainability of building materials
Mark as done

Figure 11: Contents of the MOOC.



TOPIC 4: ENVIRONMENTAL INDICATORS

- Presentation of the topic 4.
Mark as done
- Video 1. Life cycle assessment (LCA) of concrete and cement
Mark as done
- Video 2. What are environmental indicators?
Mark as done
- Annex I. The future of circular environmental impact indicators for cultural heritage buildings in Europe
Mark as done

TOPIC 5: COMPARATIVE STUDY OF CONSTRUCTION PROCESSES AND PROCEDURES

- Presentation of the topic 5.
Mark as done
- Annex I. The role of individual sustainability competences in eco-design building projects
Mark as done
- Annex II. Eco-Efficient Ventilated Facades Based on Circular Economy for Residential Buildings as an Improvement of Energy Conditions
Mark as done

Figure 12: Contents of the MOOC.

TOPIC 6: CONSTRUCTION AND DEMOLITION WASTE

- Presentation of the topic 6.
Mark as done
- Video 1. Collection and recycling of construction and demolition waste
Mark as done
- Annex I. An overview of the waste hierarchy framework for analyzing the circularity in construction and demolition waste management in Europe.
Mark as done

TOPIC 7: BIM TECHNOLOGIES

- Presentation of the topic 7.
Mark as done
- Video 1. BIM methodology- Future building
Mark as done
- Annex I. Promoting Sustainability through Investment in Building Information Modeling (BIM) Technologies: A Design Company Perspective
Mark as done

Figure 13: Contents of the MOOC.



In addition, in the OER the trainees have been provided with the project tasks to complete their training.



Cofinanciado por el programa Erasmus+ de la Unión Europea

HOME PROJECT REPORTS OER CircularBIM PRODUCTS NEWS AND EVENTS CONTACT



NORMATIVE			
name and description	Uploaded by	available language	Date
1.1. Spanish regulations	USE		May 2020
Report on the compilation of Spanish regulations for the placement of construction elements with Circular Economy concepts			
1.2. Portuguese regulations	UMinho		May 2020
Report on the compilation of Portuguese regulations for the placement of construction elements with Circular Economy concepts			



Figure 14: Screen shot of the OER.

3. PILOT COURSES

3.1. PILOT COURSE IN SPAIN (USE)

Two courses were held, both at the facilities of the University of Seville.

The first one, held at the ETSIE and given by Alejandro Rocamora, was attended by 6 people. Below are some pictures of the course:

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
11	CA01700	0.2	kg	ALAMBRE DE ACER	1.23	0.26	0	0.00146	0.00039	23.325	4.665	1.000000	0.200000	1.000000	0.20		
12	CH02910	1.1	m3	HORMIGÓN HA-20S/20/0a. S	59.53	65.43	2804.175	0	0.28698	0.31346	1579.536	1752.876	0.900000	1402.087500	0.700000	1862.80	
13				TOTAL BOMBO	618.63				0.39642		TOTAL B	3328.083	TOTAL BND	1452.76750	TOTAL BND	2014.32	
14											TOTAL B		TOTAL BND		TOTAL BND		73%
15																	50.80%
16																	73%
17	1015500010	m2	kg	SOLERA HORMIGÓN HIM-20 15 cm ESP													
18																	
19	TO02200	0.25	h	OFICIAL 2º	18.74	4.69	0	0.00000	0.00000	0.000	0.000	0.000000	0.000000	0.000000	0.000000	0.00	
20	TP00100	0.25	h	PEÓN ESPECIAL	18.9	4.73	0	0.00000	0.00000	0.000	0.000	0.000000	0.000000	0.000000	0.000000	0.00	
21	AG00400	0.15	m3	GRAVA DÍAM. 40-60 mm (B)	9.13	1.37	267.6725	0.01621	0.00349	149.018	22.393	0.900000	133.835625	1.000000	267.67		
22	CH04020	0.162	m3	HORMIGÓN HA-20S/20/01. SL	56.63	9.17	330.3828	0.22957	0.00739	1360.269	204.154	0.900000	185.591400	0.700000	231.27		
23	XI01100	1.111	m2	LÁMIRA POLIETILENO 0.2 mm	0.6	0.67	0.217736	0.00050	0.00095	132.824	147.678	0.700000	0.152428	0.700000	0.015		
24	XT14000	0.003	m3	PUESTRENO PLANCHAS I	176.6	0.54	0.236	0.05197	0.00017	1905.858	10.818	0.000000	0.000000	0.000000	0.000000	0.00	
25				TOTAL BOMBO	25.36			0.04035		TOTAL B	385.013	TOTAL BND	299.17945	TOTAL BND	499.11		83%
26																	50.00%
27																	83%
28	MURO TACHANA Y FRETEL																
29	06BMM10000	m2	kg	FABRICA ARMADA BLOQ. HORM. LIG. MACIZO 50x20x25 cm Y TRASOSADO AUTOPORTANTE DE M													
30																	
31	ATC00100	0.5	h	CUADRILLA ALBAÑILERIA. #	37.51	18.76	0	0.00000	0.00000	0.000	0.000	0.000000	0.000000	0.000000	0.000000	0.00	
32	AGM82000	0.008	m3	MORTERO LIGERO DE AREL	87.93	0.76	22.61192	0.61275	0.00040	6200.116	49.802	0.000000	0.000000	0.000000	0.000000	11.31	
33	CAB0030	1.25	hg	ARMADURA TRIANGULADA I	3.78	4.73	1.26	0.00146	0.00182	23.325	29.154	1.000000	1.250000	1.000000	1.25		

Figure 15: Pilot course in Spain.

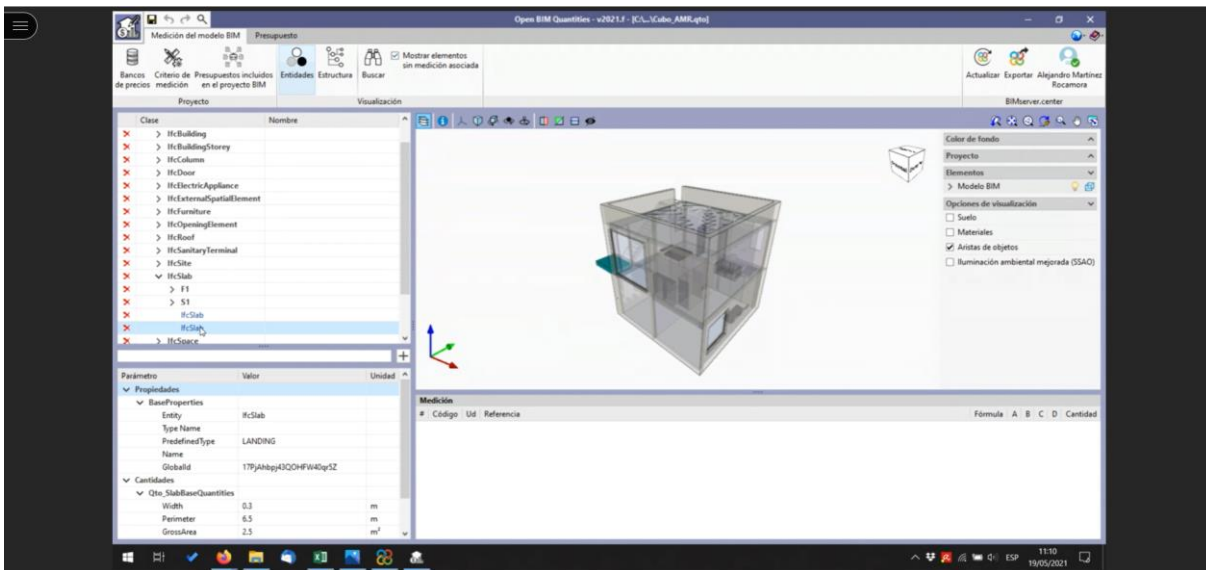


Figure 16: Pilot course in Spain.

The second one was attended by a total of 25 students. This course was held at the ETSA and was given by Pilar Mercader(USE) and Pablo Gylabert (CYPE). Below are some pictures of the course:

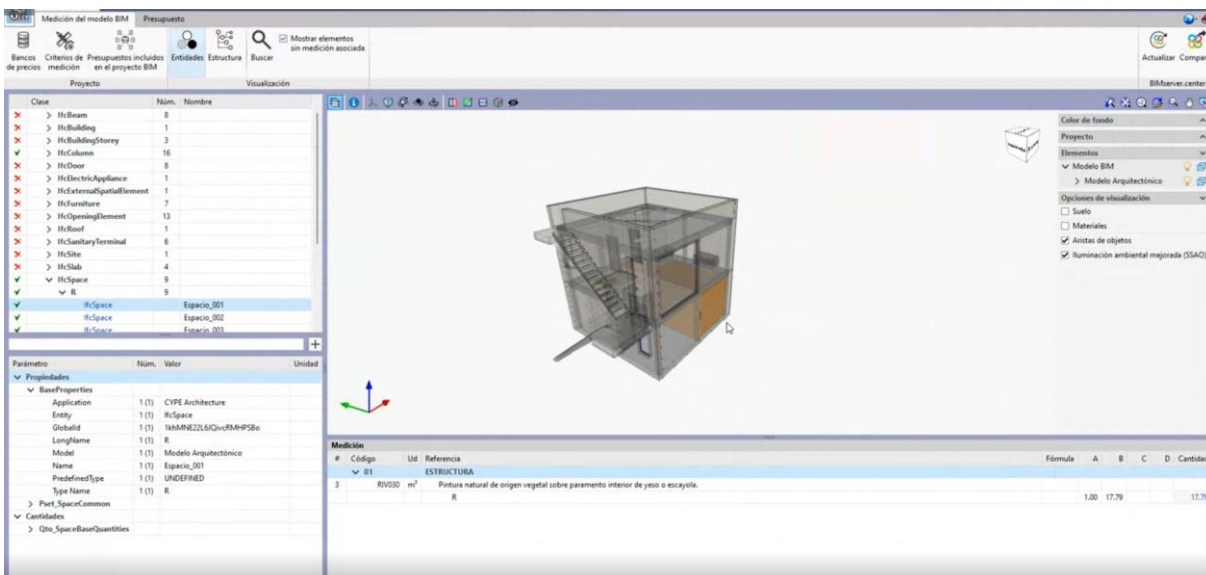


Figure 17: Pilot course in Spain.

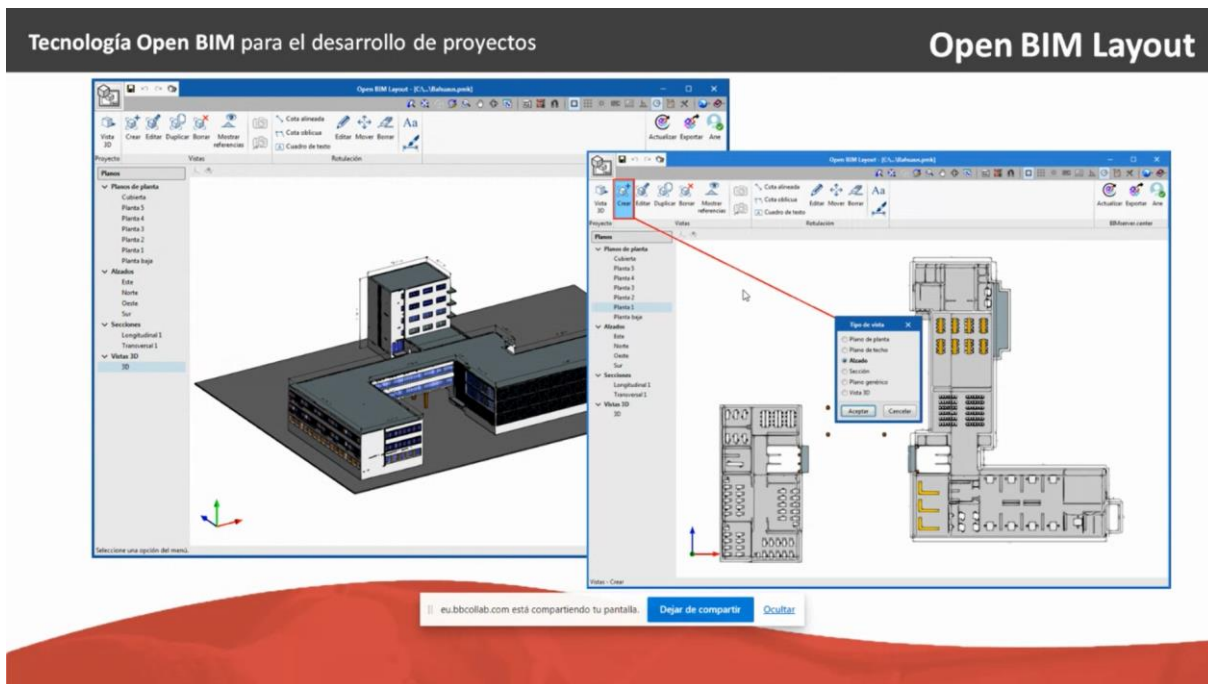


Figure 18: Pilot course in Spain.

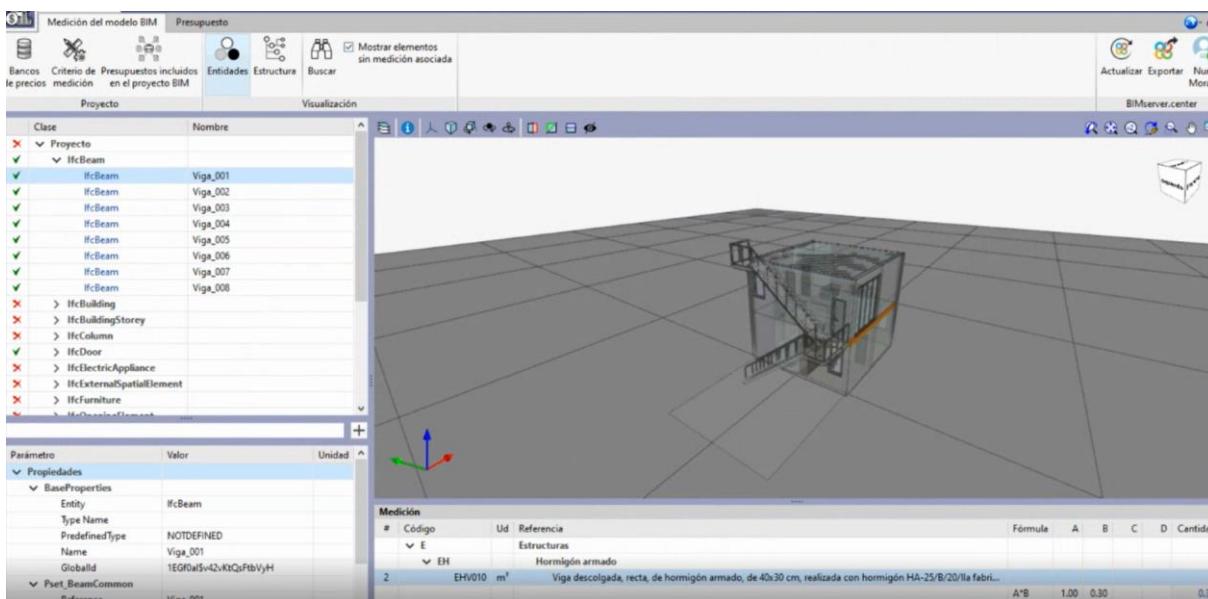


Figure 19: Pilot course in Spain.



3.2. PILOT COURSE IN PORTUGAL (UMINHO)

Along the months of June and July of 2022, weekly meetings on Thursdays at 5 p.m. were held in which the subjects of the course CircularBIM were presented and discussed in group. During these discussions, a group of eight people gathered, under the coordination of prof. Miguel Azenha, which led the presentation of concepts.

The training material of the course was also made available to the participants through an online platform, so they could visualize the presentation slides in English, Portuguese or Spanish and a recorded video class in an asynchronous format.

On the 21st of July, the link of the course evaluation form was shared with the participants, which were asked to complete it in order to contribute with the evaluation and improvement of the training program.

Below is a picture of the course:



Figure 20: Pilot course in Portugal (includes some invited members that showed in one of the sessions but were not transversal to all sessions).



3.3. PILOT COURSE IN RUMANIA (UNITBV)

UNITBV organized the pilot course between 6 – 8 of June 2022, in this way, all the projects' results being finished and useful for students.

The course content, developed during the project's implementation, divided into six modules, was translated into Romanian language for a better understanding for all participants.

The pilot course was conducted with physical presence for all modules.

UNITBV uses an on-line platform for teaching and learning activities based on Moodle platform. In this platform, a CircularBIM pilot course was created and all the content (in both language, English and Romanian) was uploaded, so that the students could have access to it.

The screenshot displays the Moodle e-learning platform interface. At the top, it shows the URL 'unitbv.ro - e-Learning 2021-2022' and the language 'Română (ro)'. The main content area is divided into several sections:

- Anunțuri pentru comunitatea de utilizatori elearning.unitbv.ro:** A welcome message and a notice about the platform's availability and a link to a ticket for access issues.
- Cursurile mele:** A list of courses, including 'CircularBIM - curs pilot' and various engineering and construction courses.
- Cursuri accesate recent:** A section showing recently accessed courses, with two entries for 'CircularBIM - curs pilot' by Radu Mircea MUNTEAN.

Figure 21: MOOC of the pilot course in Romania.



CircularBIM - curs pilot

Tablou de bord / Cursurile mele / Zi / Facultatea de Construcții / Departamentul de Inginerie Civilă / Radu Mircea MUNTEAN / CircularBIM

The screenshot displays the user interface of the MOOC platform. On the left, there is a 'Meniu principal' (Main Menu) with a tree structure: 'Tablou de bord' (Dashboard) containing 'Pagina principală' (Home page) and 'Paginile site-ului' (Site pages); 'Cursurile mele' (My Courses) containing 'Zi' (Day) with sub-items for 'Facultatea de Inginerie Mecanică', 'Facultatea de Construcții', and 'Departamentul de Inginerie Civilă' (Civil Engineering Department) with sub-items for 'Teofil Florin GALATANU', 'Daniel TAUS', and 'Radu Mircea MUNTEAN'. Under 'Radu Mircea MUNTEAN', there is a 'CircularBIM' section with sub-items: 'Participanți' (Participants), 'Note' (Notes), 'General', 'English version', 'Romanian version', 'TRTN', 'LECI08', 'MC08', 'CI08', and 'Tutorat_I MEMC'. There is also a 'Mai multe...' (More...) button and a 'Cursuri' (Courses) link.

The central content area shows a list of course units. At the top, there are 'Anunțuri' (Announcements) and 'BBB' (Blackboard). Below that, there is an 'English version' section with six units: 'CircularBIM UNIT 1 Introduction EN', 'CircularBIM UNIT 2 Circular Economy for construction sector EN', 'CircularBIM UNIT 3 Sustainability of building materials EN', 'CircularBIM UNIT 4 Environmental indicators EN', 'CircularBIM UNIT 6 Construction and demolition waste EN', and 'CircularBIM UNIT 5 Comparative study of construction processes and procedures EN'. Below that, there is a 'Romanian version' section with six units: 'CircularBIM UNIT 1 Introduction RO', 'CircularBIM UNIT 2 Circular Economy for construction sector RO', 'CircularBIM UNIT 3 Sustainability of building materials RO', 'CircularBIM UNIT 4 Environmental indicators RO', 'CircularBIM UNIT 5 Comparative study of construction processes and procedures RO', and 'CircularBIM UNIT 6 Construction and demolition waste RO'. Each unit has a plus icon and an edit icon.

At the bottom, there is an 'Administrare' (Administration) section with sub-items: 'Administrare curs' (Course administration) containing 'Editează setările' (Edit settings) with sub-items 'Utilizatori' (Users) and 'Filtre' (Filters); 'Rapoarte' (Reports); 'Setare catalog de note' (Set note catalog); 'Backup'; 'Restaurează' (Restore); 'Importă' (Import); 'Resetează' (Reset) with sub-item 'Banca de întrebări' (Question bank); and 'Coș de reciclare' (Recycling bin).

At the very bottom, there is a section 'Adaugă un bloc' (Add a block) with a dropdown menu labeled 'Adaugă...' (Add...).

Figure 22: MOOC of the pilot course in Romania.

Participants to the pilot course were selected from undergraduate students from the Faculty of Civil Engineering. They were volunteers, being enrolled due to their interest to the proposed content and themes, since no ECTS credits were offered. They found out about the project and its topics in different presentations made by the project team during the implementation and developing period.

A number of 30 participants were selected and enrolled into the platform, based on their interest, similarity to their present and future study program and on their availability for the specific period of time for the implementation of the pilot course.



O3/A2. PILOT CIRCULARBIM COURSE IMPLEMENTATION: ENVIRONMENT TEST AND TECHNICAL IMPROVEMENTS

The selected participants were enrolled into the on-line platform, having access to download and study the course content and to respond to a questionnaire after completing the course.

CircularBIM - curs pilot

Tablou de bord / Cursurile mele / Zi / Facultatea de Construcții / Departamentul de Inginerie Civilă / Radu Mircea MUNTAN / CircularBIM / Participanți

Utilizatori înscriși

<input type="checkbox"/>	Nume / Prenume	Adresa de e-mail	Roluri	Grupuri	Status
<input type="checkbox"/>	VA Albu Vasile Ionut	vasile.albu@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	AA Andrei Andreea Gabriela	gabriela.andrei@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	VB Barzo Valentin Mădalin	valentin.barzo@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	LB Burlan Laurentiu Marian	laurentiu.burlan@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	AC Ciobanu Ana Maria	ana-maria.ciobanu@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	CC Ciulei Cristina Paula	cristina.ciulei@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	VC Colomitz Vlad Iulian	vlad.colomitz@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	VF Florea Vlad George	vlad-george.florea@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	DF Fratila Denisa	denisa.fratila@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	RF Frone Ruben Levii	ruben.frone@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	DG Ghiveciu Denisa Aurelian	denisa.ghiveciu@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	GI Iordache George	george.iordache@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	AI Ivan Andrei Valentin	andrei-valentin.ivan@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	NK Kelemen Noemi	noemi.kelemen@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	EK Kover Estera Richarda	estera.kover@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	SL Luca Stefania	stefania.luca@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	MM Man Mihai	mihai.man@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	AM Marin Andreea Lavinia	lavinia.marin@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	VM Mititelu Vlad	vlad.mititelu@student.unibv.ro	Cursant	Niciun grup	Activa
<input type="checkbox"/>	RM MUNTAN Radu Mircea	radu.m@unibv.ro	Formator, Creator curs	Niciun grup	Activa

Figure 23: Participants of the pilot course in Romania.



Figure 24: Pilot course in Romania.



Figure 25: Pilot course in Romania.

To finalize the pilot course, students were asked to do a homework - a written paper on a chosen theme from those discussed during the pilot course. All the answers were uploaded on the university e-learning platform and graded by the professors.

After the end of the pilot course, an on-line questionnaire was submitted to the participants asking for their opinion regarding the content and the quality of presentations.

Certificates of attendance were given to all the students who successfully completed the pilot course. Some promotional materials like a notebook and a pen with project's logo were offered to all participants to be used during the pilot course.

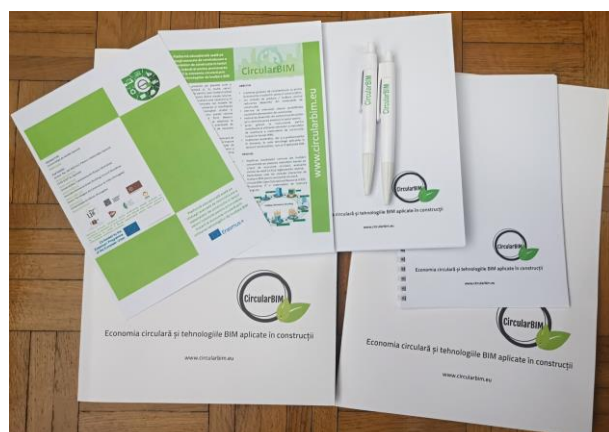


Figure 26: Certificates of attendance of the pilot course in Romania.



4. QUESTIONNAIRE


A specific questionnaire was developed to check and improve the course programmes and training activities.


These training activities were carried out for the educational staff to evaluate the content of the curricula and training material developed during the project.

The questionnaires given to the participants included a generic question to propose any comments they considered necessary to improve the quality of all the products of the CircularBIM project.

The questionnaire for the evaluation of the training activities carried out was the following:
https://docs.google.com/forms/d/e/1FAIpQLSce6QlUDqKkNhmlhFW9LlOYN4u4BxqgDEOhaYZ7RGFxsBdLGg/viewform?usp=sf_link







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

Feedback questionnaire of CircularBIM pilot course

Project code: 2019-1-ES01-KA203-065962

 aeipiedra@gmail.com (no compartidos) [Cambiar de cuenta](#) 

***Obligatorio**

1. Questionnaire supplied by:

- SPAIN: Universidad de Sevilla (USE), CYPE SOFT SL (CYPE) and Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM)
- ROMANIA: Universitatea Transilvania din Brasov (UTBv) and Asociatia Romania Green Building Council (RoGBC)
- PORTUGAL: Centro Tecnológico da Cerâmica e do Vidro (CTCV) and Universidade do Minho (UMinho)

2. Overall, how satisfied were you with the training activity? *

	1	2	3	4	5	
Not satisfied at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

Figure 27: Pilot course questionnaire



3. To what extent do you agree or disagree with the following statements? *

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Training materials' contents were of my interest.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel now better informed on various aspects related to the circular economy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I now better understand the benefits of the CircularBIM tool.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that it has helped me to reinforce my knowledge, competences and skills about ecological challenges and BIM technologies.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 28: Pilot course questionnaire



4. To what extent did the training activity show the following attributes? *

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The contents were clearly understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contents were interesting and motivating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training activity was well-organised and well-structured.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall atmosphere was pleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 29: Pilot course questionnaire



5. Do you have any further comments and recommendations on the CircularBIM * training activity? What could have been done better? (1: Inefficiently, 5: Efficiently)

	1	2	3	4	5
The co-ordination and the secretariat functioned:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The information you received before the training activity, intended to facilitate your participation was:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The organisation of the facilities used for the training activity were:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How was the available technical equipment during the training activity?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The agenda of the training activity was:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The material distributed during the training activity was:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 30: Pilot course questionnaire



O3/A2. PILOT CIRCULARBIM COURSE IMPLEMENTATION: ENVIRONMENT TEST AND TECHNICAL IMPROVEMENTS

The way you were received at the training activity was	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the start of the training activity, the themes, the time available and the procedures were:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The time management of the training activity was:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The working conditions for the training activity were:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The working atmosphere for the training activity were:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The general management of the training activity was:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The management of the development of the work in the training activity was:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course relates to the circular economy and BIM technologies:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 31: Pilot course questionnaire



The design of the curriculum environment is detailed enough to understand the topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The curriculum is enough to be able to carry out the works described in it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The development of the content is correct for attract and paying attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contents are useful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The duration of the course is adequate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 32: Pilot course questionnaire



6. Do you have any further comments and recommendations on the CircularBIM ^{*} training activity? What could have been done better?


	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The course relates to the circular economy and BIM technologies:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The design of the curriculum environment is detailed enough to understand the topics.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The curriculum is enough to be able to carry out the works described in it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The development of the content is correct for attract and paying attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The contents are useful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The duration of the course is adequate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 33: Pilot course questionnaire



7. Please, tell us what kind of improvement you can suggest:

Tu respuesta



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Figure 34: Pilot course questionnaire



4.1. QUESTIONNAIRE RESULTS

1. Questionnaire supplied by:

47 respuestas

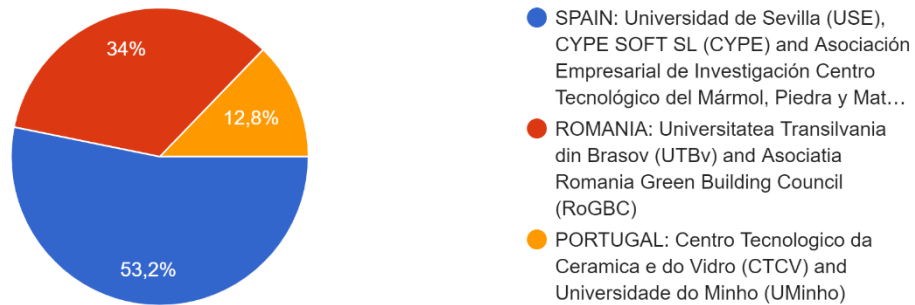


Figure 35: Questionnaire results

2. Overall, how satisfied were you with the training activity?

47 respuestas

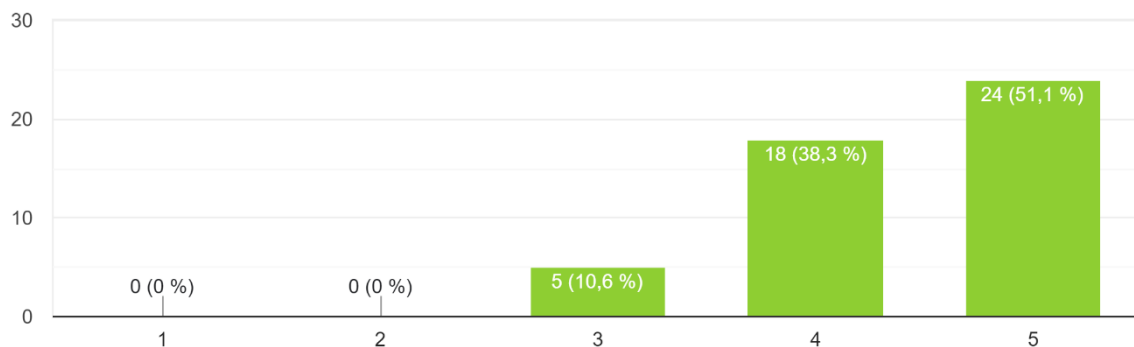


Figure 36: Questionnaire results



3. To what extent do you agree or disagree with the following statements?

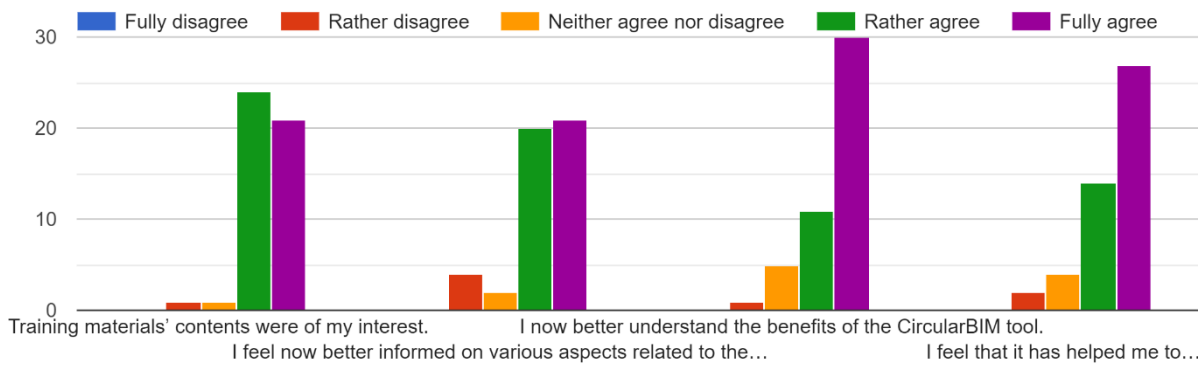


Figure 37: Questionnaire results

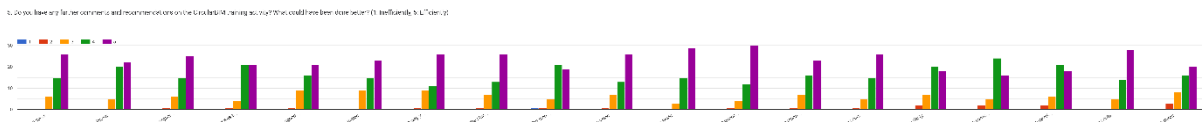


Figure 38: Questionnaire results

6. Do you have any further comments and recommendations on the CircularBIM training activity? What could have been done better?

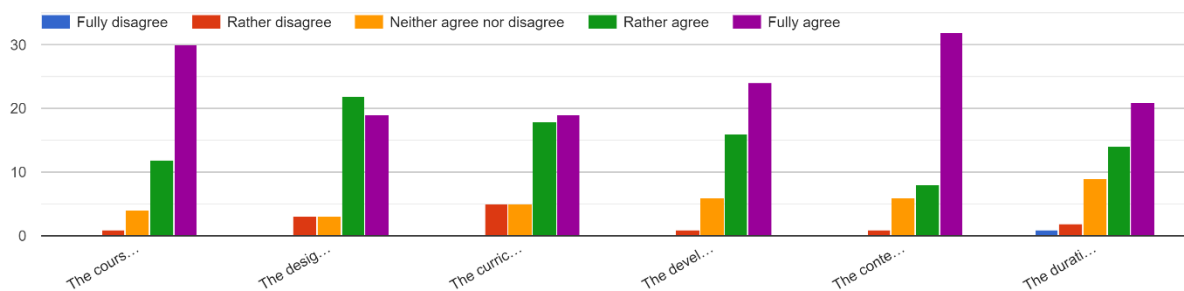


Figure 39: Questionnaire results



O3/A2. PILOT CIRCULARBIM COURSE IMPLEMENTATION: ENVIRONMENT TEST AND TECHNICAL IMPROVEMENTS

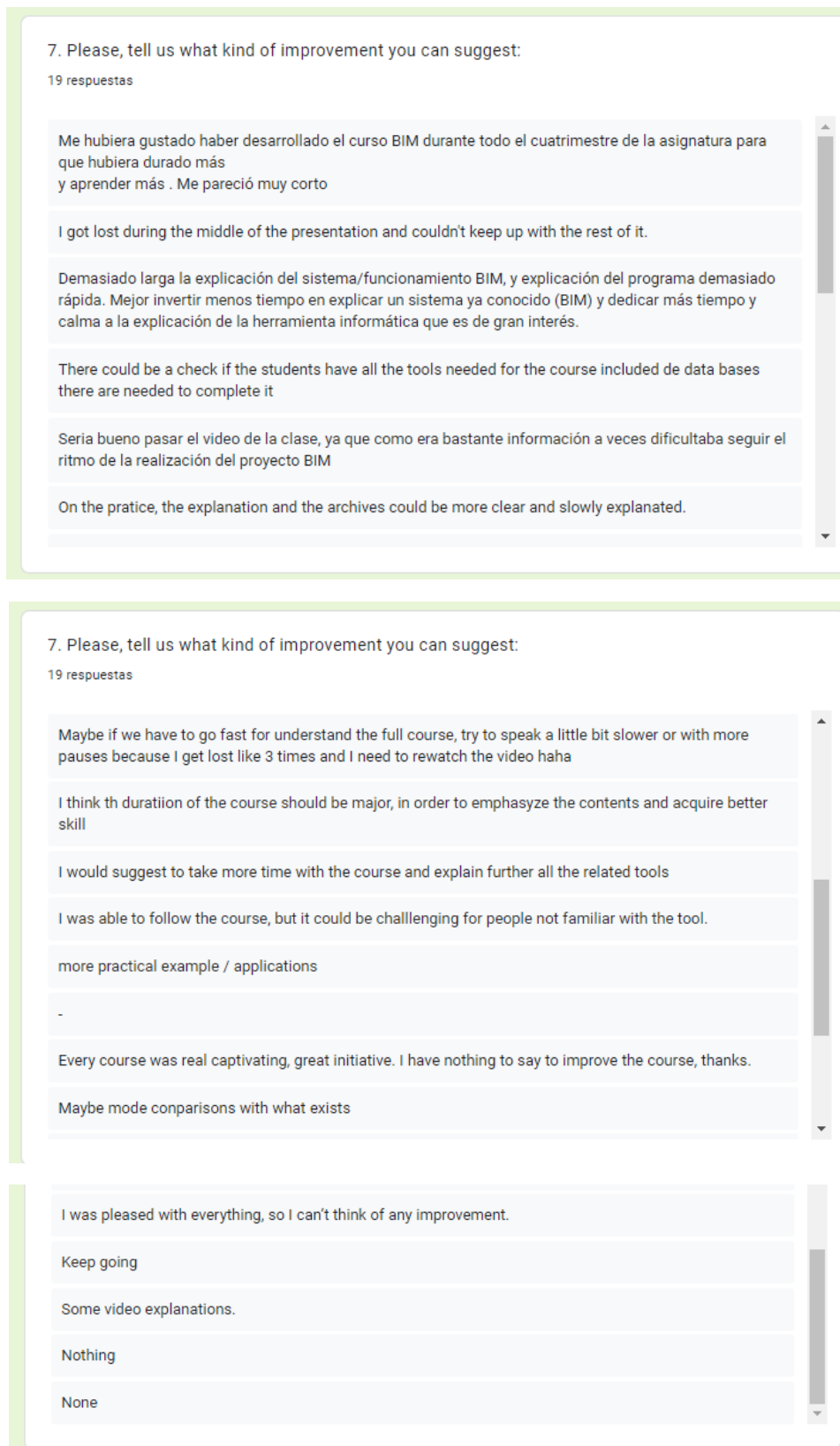


Figure 40: Questionnaire results



5. CONCLUSIONS

CONCLUSIONS OF SURVEYS:

Feedback on the pilot courses was obtained from 47 people. More than 67% of students completed the survey.

According to the data obtained from the questionnaires carried out in the training activities, it can be concluded that the results have been quite positive. From the surveys collected, we can conclude that all participants rated the training activity well (from 3 to 5).

As for the rest of the questions, it shows that some of the participants have not improved their knowledge in certain areas, but they have improved their knowledge in other complementary areas. It is also noteworthy to add that some participants did not find the contents clearly understandable and that they required a greater amount of time to assimilate this new knowledge.

There were also shortcomings in the curriculum, so it was decided to complete the topics and make them more extensive.

In short, we can conclude that the students of these pilot courses find the contents interesting, but the training time is scarce, with some of them suggesting that the course should last longer, in some cases even suggesting that it should be taught over a four-month period.

CONCLUSIONS OF PILOT COURSES:

Despite being pilot courses, the students have been happy with them. This may be due to the personalised attention they have received with the tutorials, as they have always tried to get quick answers to their questions, either through video calls or email conversations.

In addition, some of the students expressed their satisfaction with the supplementary material, as it strengthened their learning process.

Until now, only the basic terms and results of the project have been presented to teachers and students. Implementation in the teaching process based on an elaborate curriculum has not yet started.

6. IMPACT

To develop and test parts of the project, especially the pilot course units, students from the different entities involved in the project participated as volunteers. They put into practice and presented themes and topics related to circular economy, building materials, LCA, etc. The whole project and the pilot course were very well received by the students, demonstrating their interest as well as in the use of the knowledge acquired in their studies.

Moreover, during the development and implementation of the pilot course, the need to update and correlate the Romanian curricula with other European curricula emerged. In this sense, new courses based on the curricula developed in the CircularBIM project were proposed for the future: Composite Building Materials and Elements, Performing Technologies in Construction (for undergraduate studies) and Sustainable Construction and Circular Economy (for Master studies).