TASK O3/A2. Pilot BIMEPD Course implementation: environment test and technical improvements.

Contents

1. INTRODUCTION

The implementation of training courses based on the developed training materials and their use among architects, companies, professional associations, educational organisations and any other organisation related to the architecture and building design sector has been crucial to test the effectiveness of the software products developed in the BIMEPD project.

The implementation of the pilot courses in Spain and Poland has served to test and improve the course programmes as well as the multimedia material produced. These courses were developed by PUT and COAMU, which carried out training courses for architects.

The aim of these courses was the evaluation by the teaching staff of the content of the curricula and the multimedia material produced in the framework of the project. Following the evaluation, this evaluation report has been produced, with recommendations for modifying or improving the materials.

The partners have also produced a report with all the validations and improvements collected for implementation with the aim of providing products of the highest possible quality and perfectly adapted to the needs of adult education.

This report and all the information about the project are available in the following url:

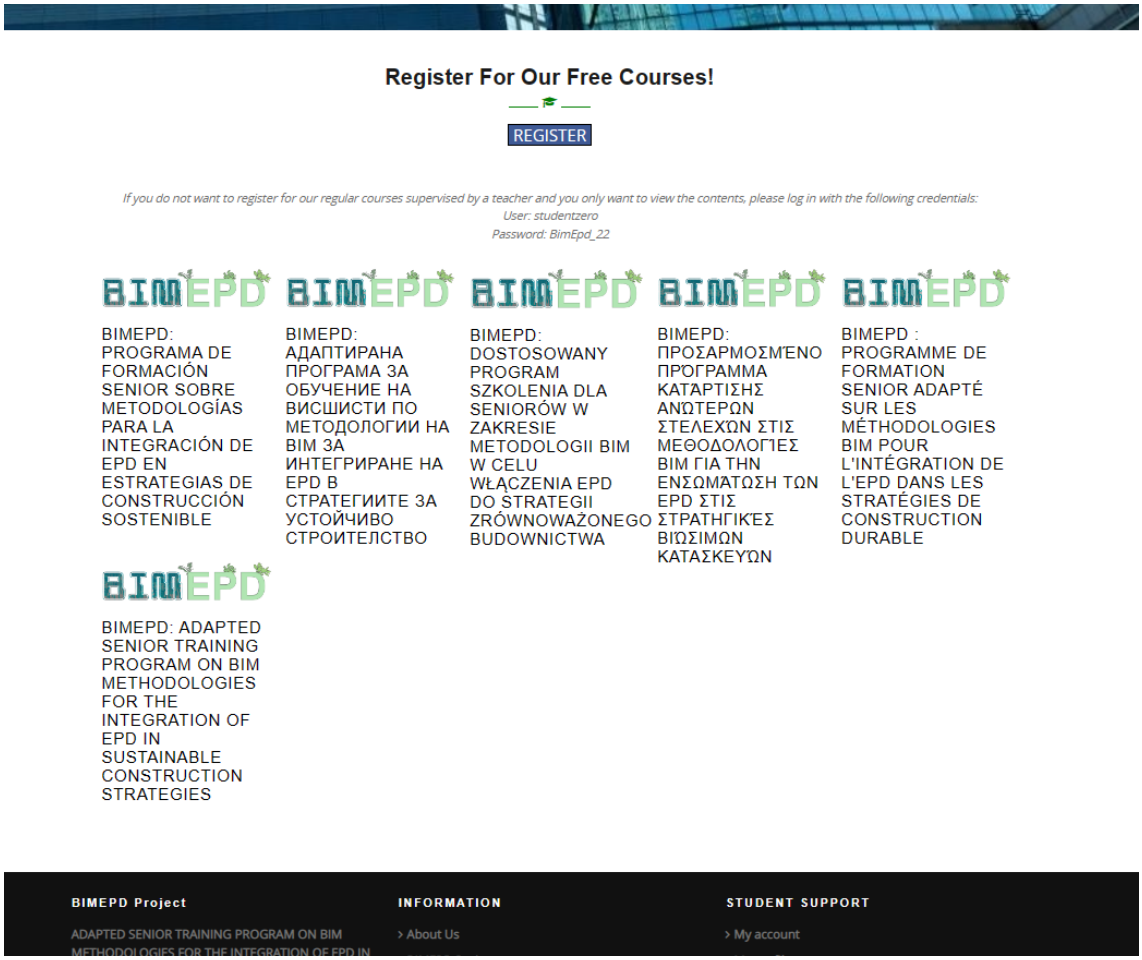
- BIMEPD project web: https://bimepd.eu/

2. MOOC AS SUPPORT OF THE PILOT COURSE

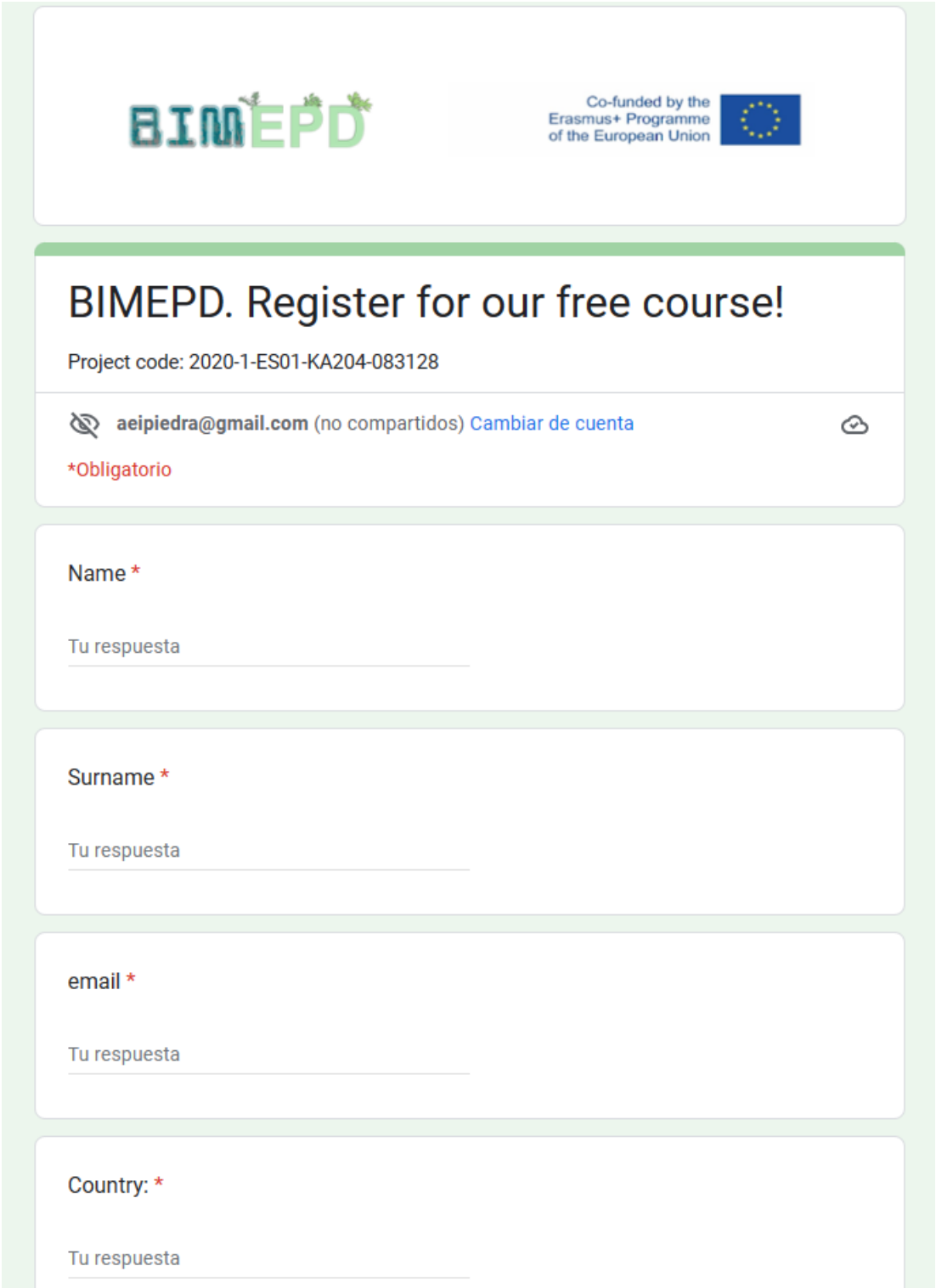
The MOOC (Massive Open Online Course), hosted by the OER (https://class.bimepd.eu/), supports teachers and learners in the delivery of courses. It is a flexible learning modality as participants can access it from anywhere and at any time.

To access the MOOC, you can do it from the web, through the OER, or directly from the link mentioned above. To access from the OER (https://bimepd.eu/oer/), when you are on this screen, click on "COURSE ACCESS".

Once inside the MOOC, click on one of the courses.



By accessing the programme "ADAPTED SENIOR TRAINING PROGRAM ON BIM METHODOLOGIES FOR THE INTEGRATION OF EPD IN SUSTAINABLE CONSTRUCTION STRATEGIES" we can see the materials created in the project, as well as complementary material (regulations, videos and related articles, etc.) for the expansion of users' knowledge. Courses can be accessed by registering on the registration form at the following link: https://docs.google.com/forms/d/e/1FAIpQLSfXK86BN4qgMvpOAcMh-0flIMIa8LtHNoKCHoEkziw4KF-4sw/viewform



BIMEPD. Register for our free course!

Project code: 2020-1-ES01-KA204-083128

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

*Obligatorio

Name *

Tu respuesta

Surname *

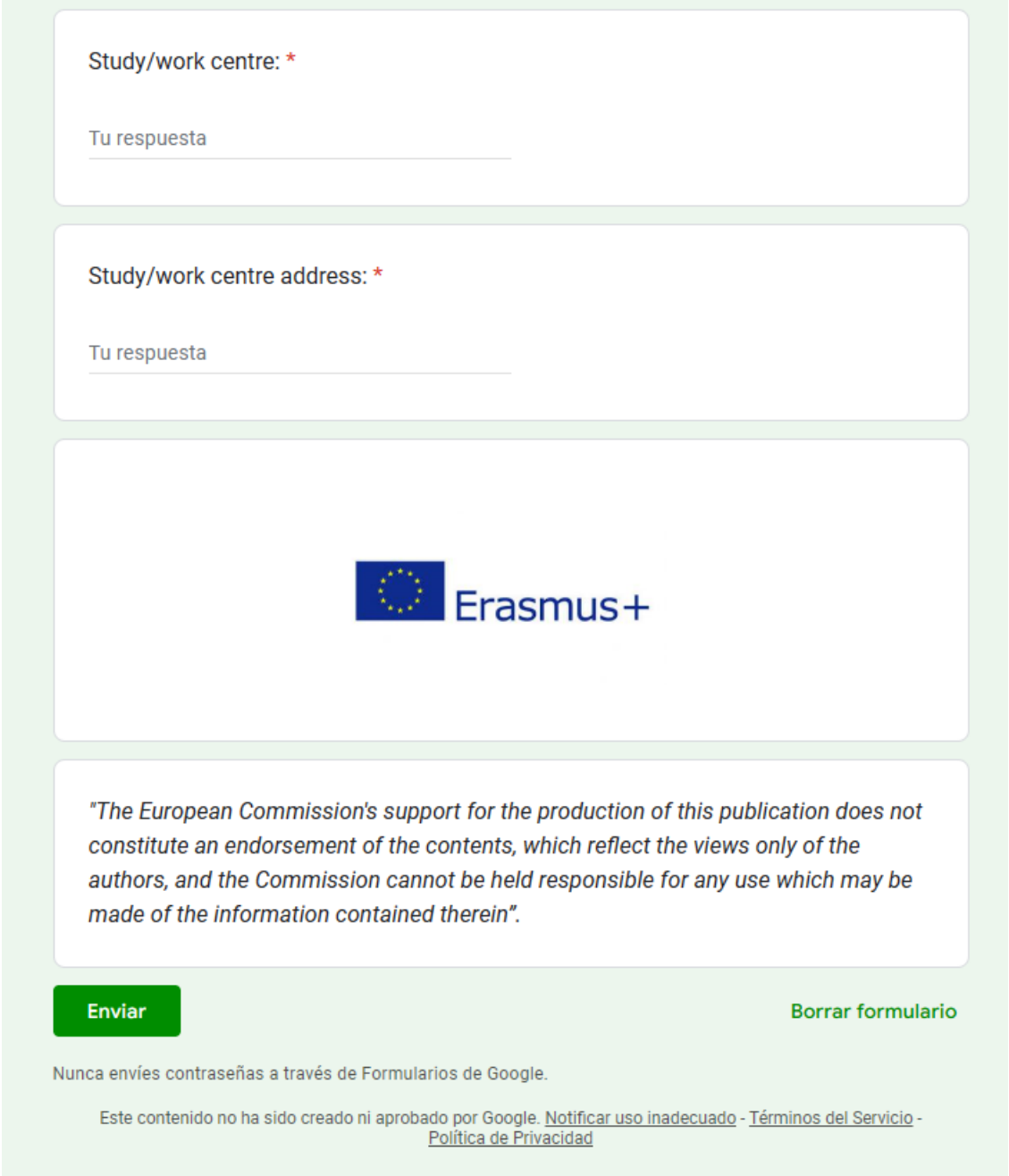
Tu respuesta

email *

Tu respuesta

Country: *

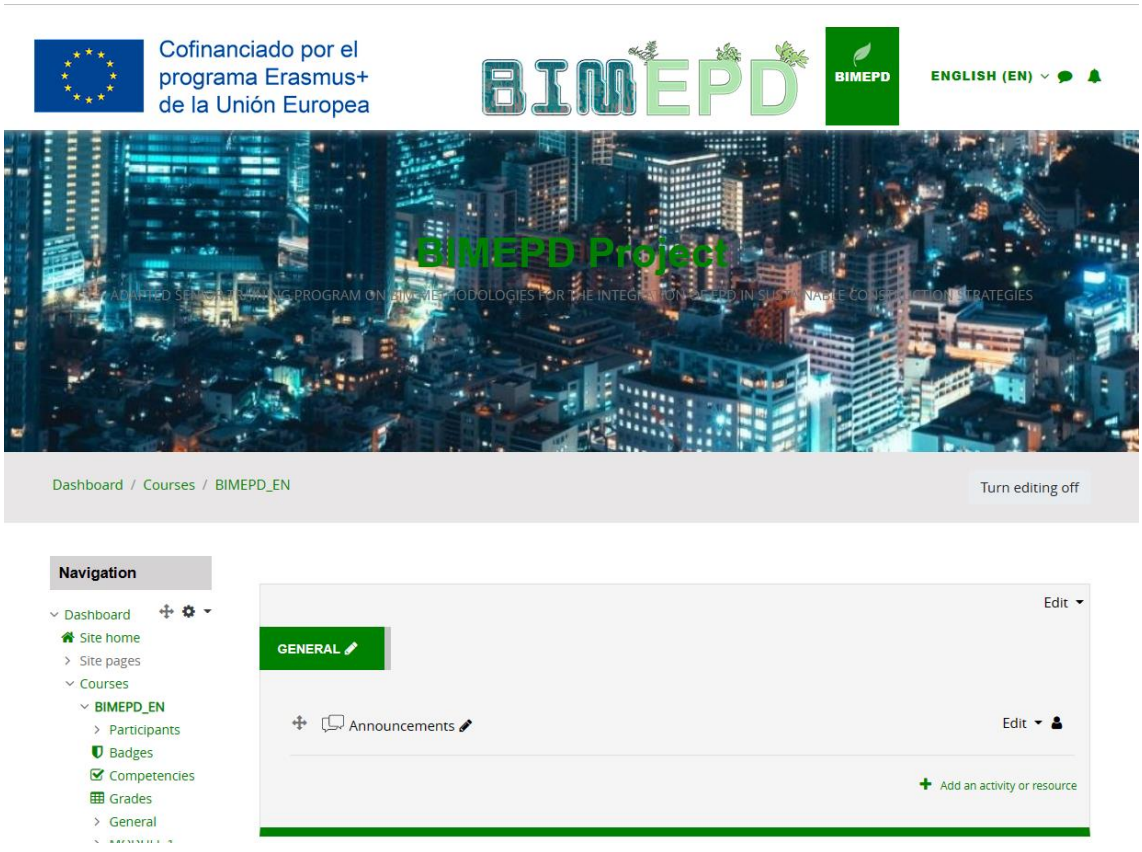
Tu respuesta

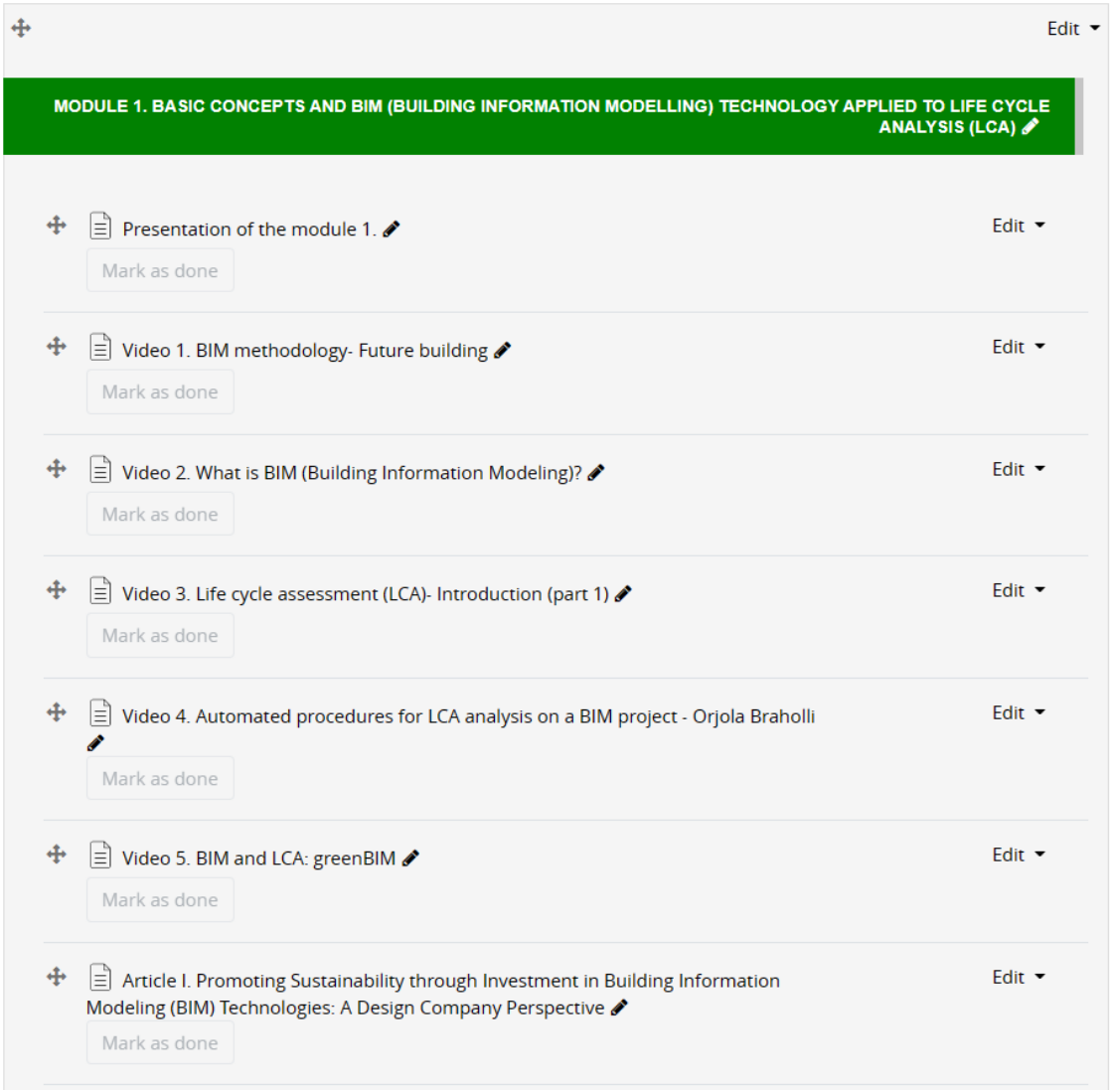


Once a significant number of people have registered, the course will start under the supervision of a teacher.

However, if the user does not want to wait or does not want to take a supervised course, the contents can be viewed by using the username and password on the course access page.

Users can work their way through the programme by reading the topics and playing the accompanying videos.

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2020-1-ES01-KA204-083128
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Erasmus+
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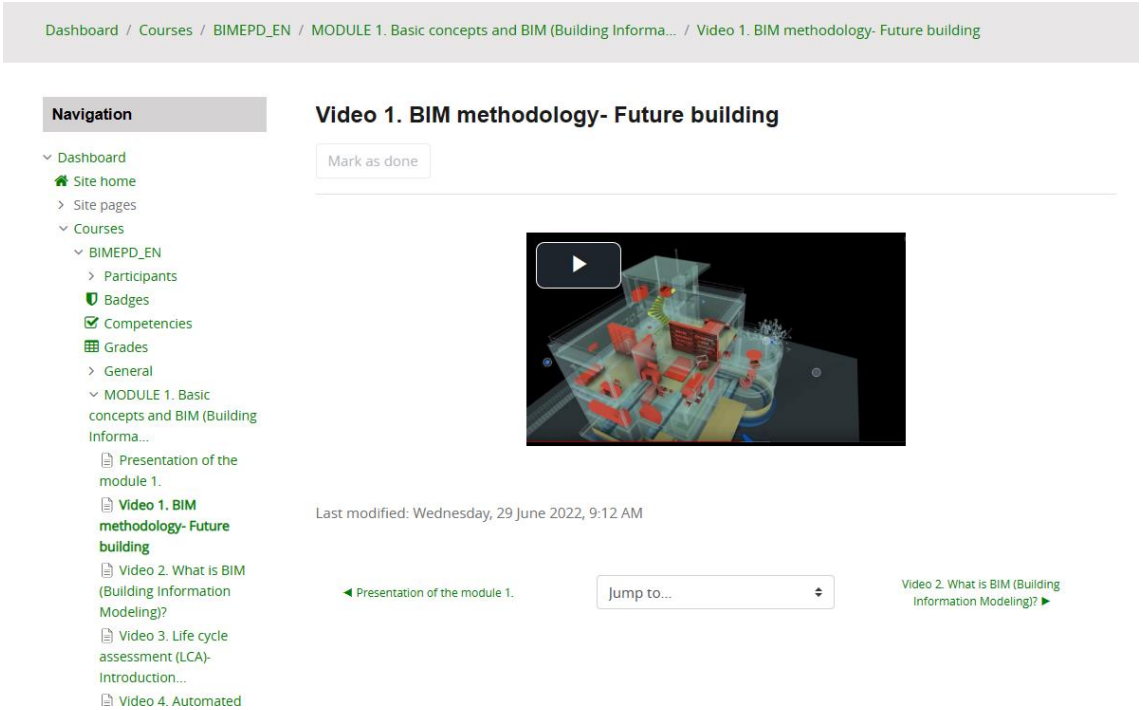
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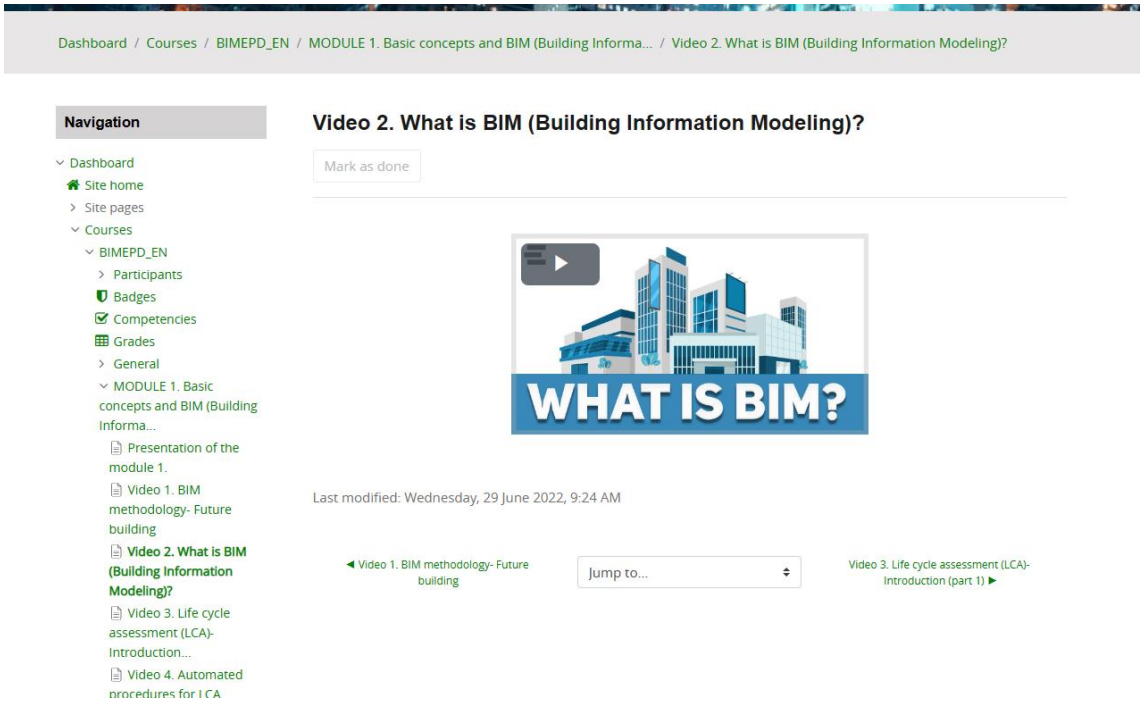
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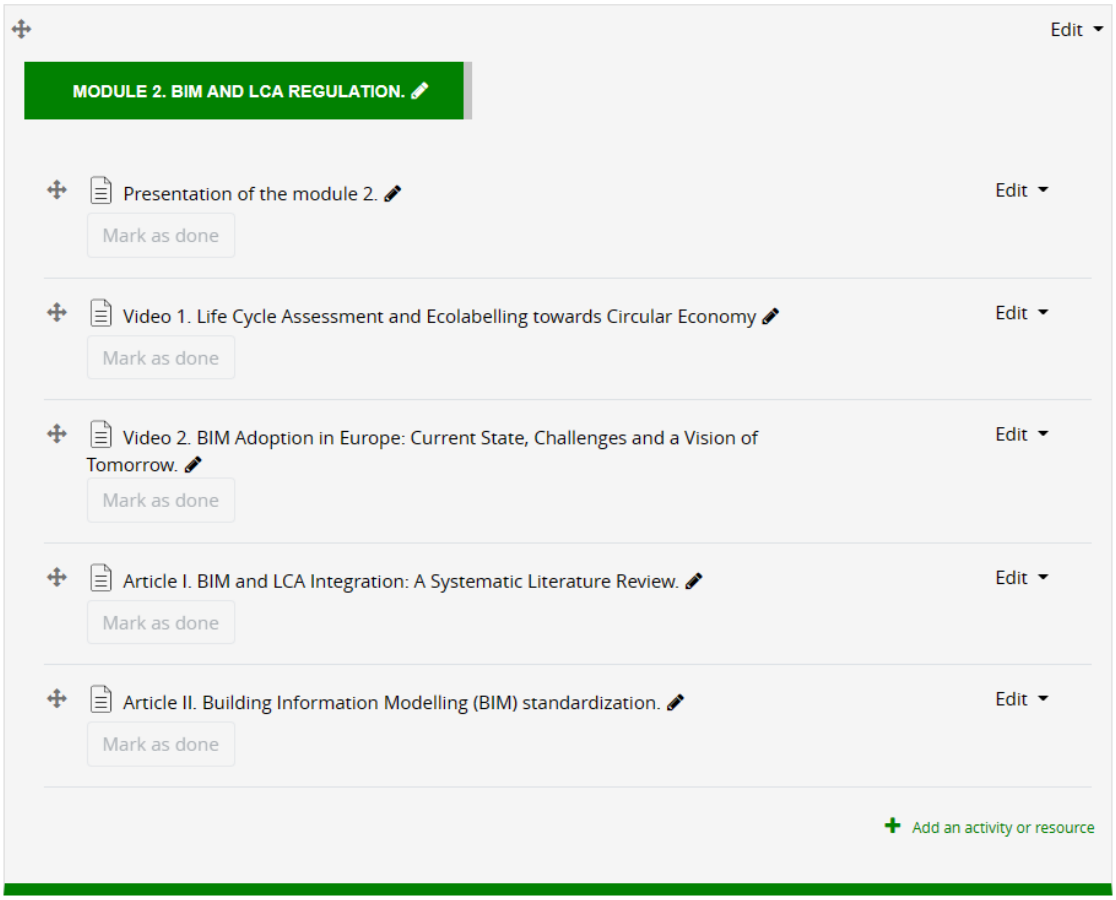
Video 3. Life cycle assessment (LCA)- Introduction (part 1) ►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Article II. Building Information Modelling (BIM) standardization.
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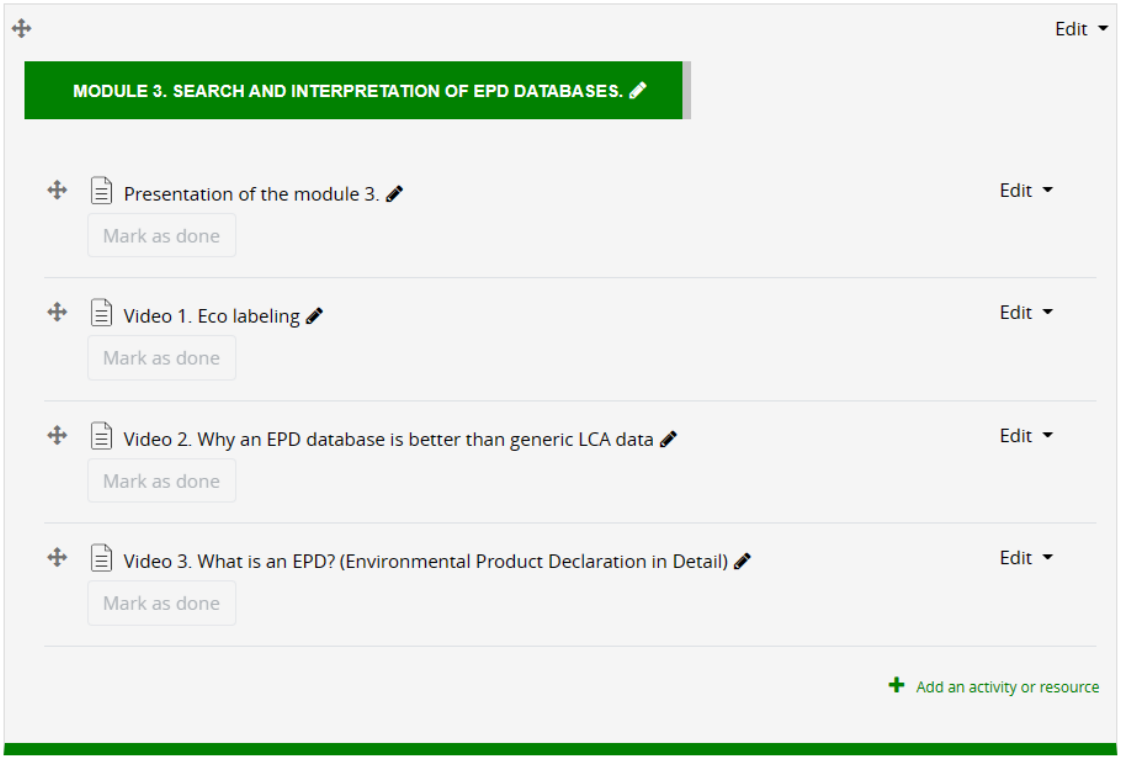
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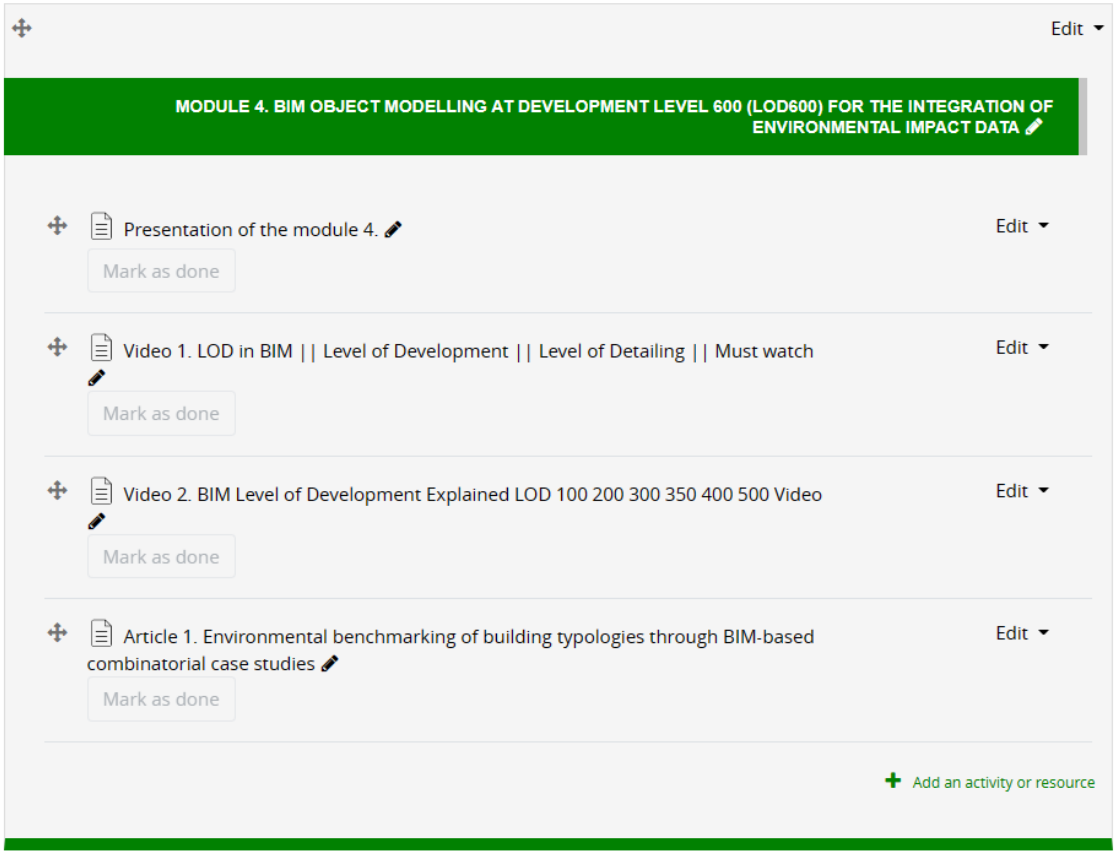
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Article 1. Environmental benchmarking of building typologies through BIM-based combinatorial case studies
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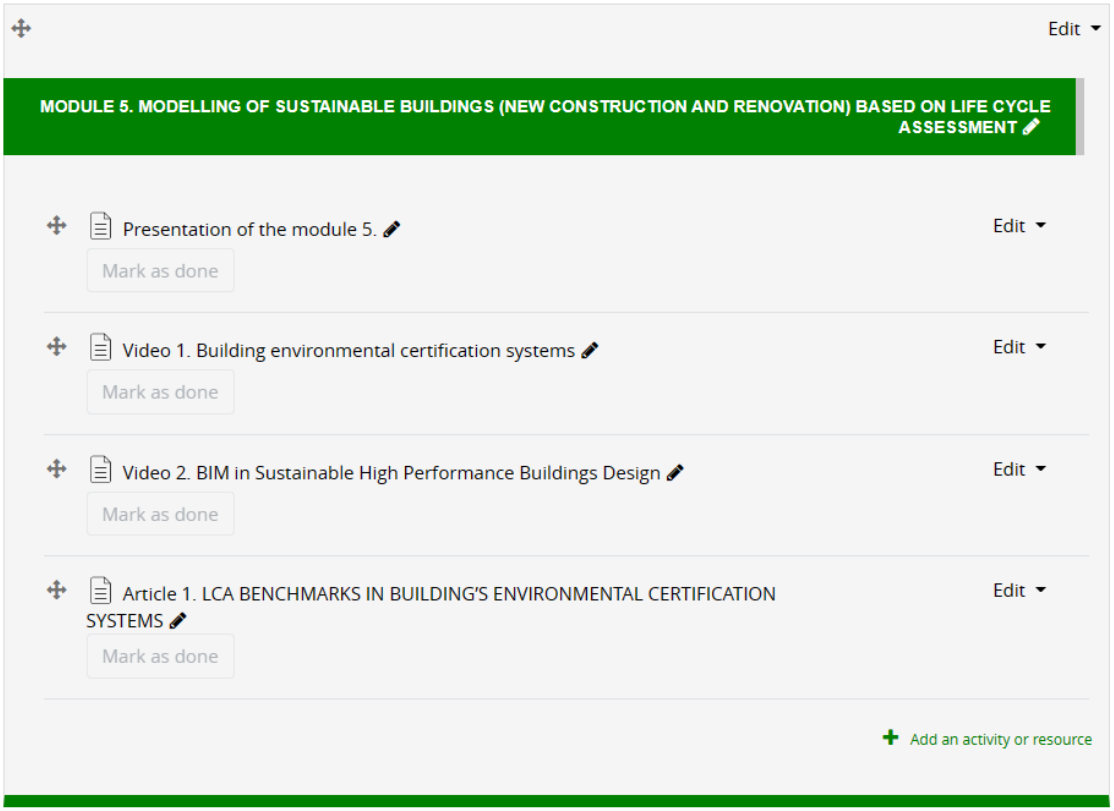
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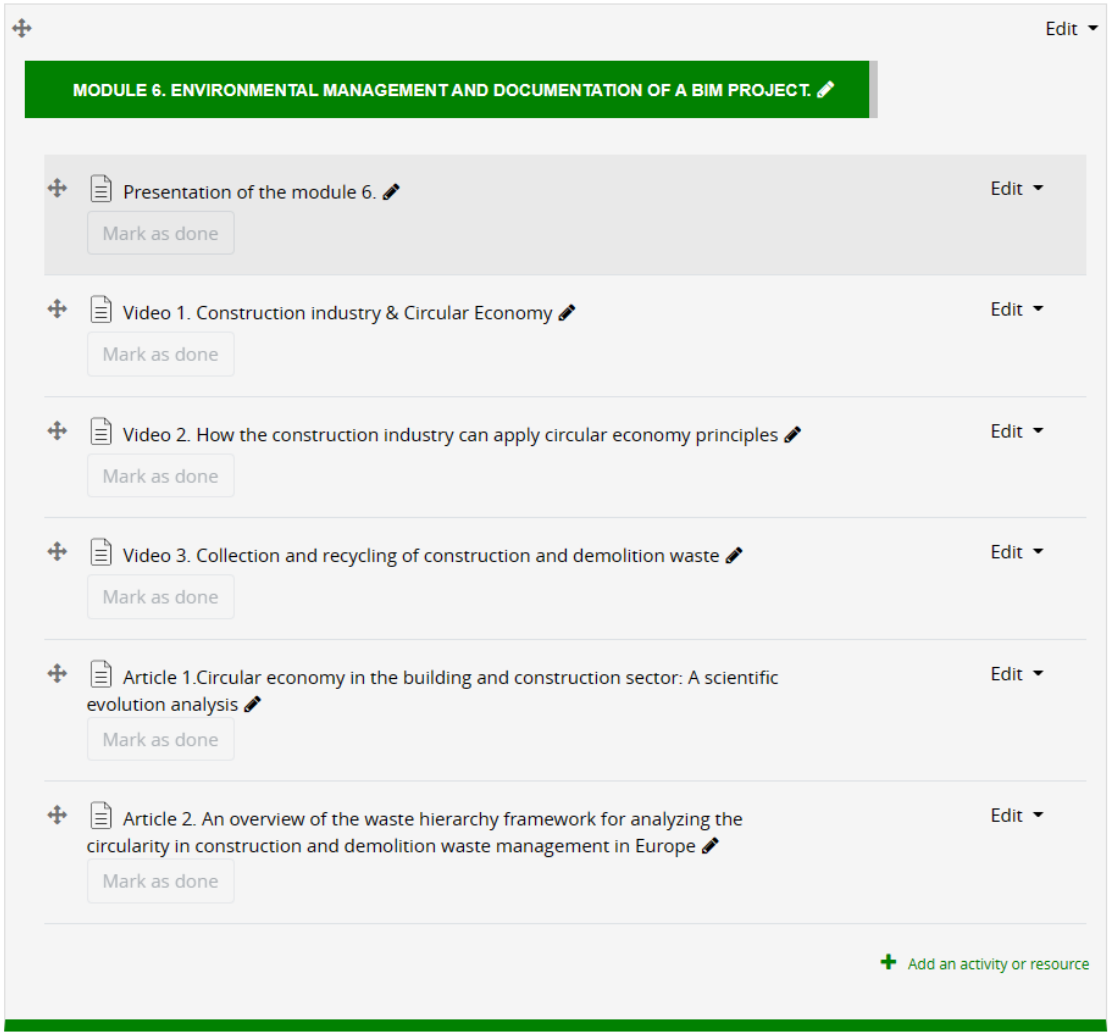
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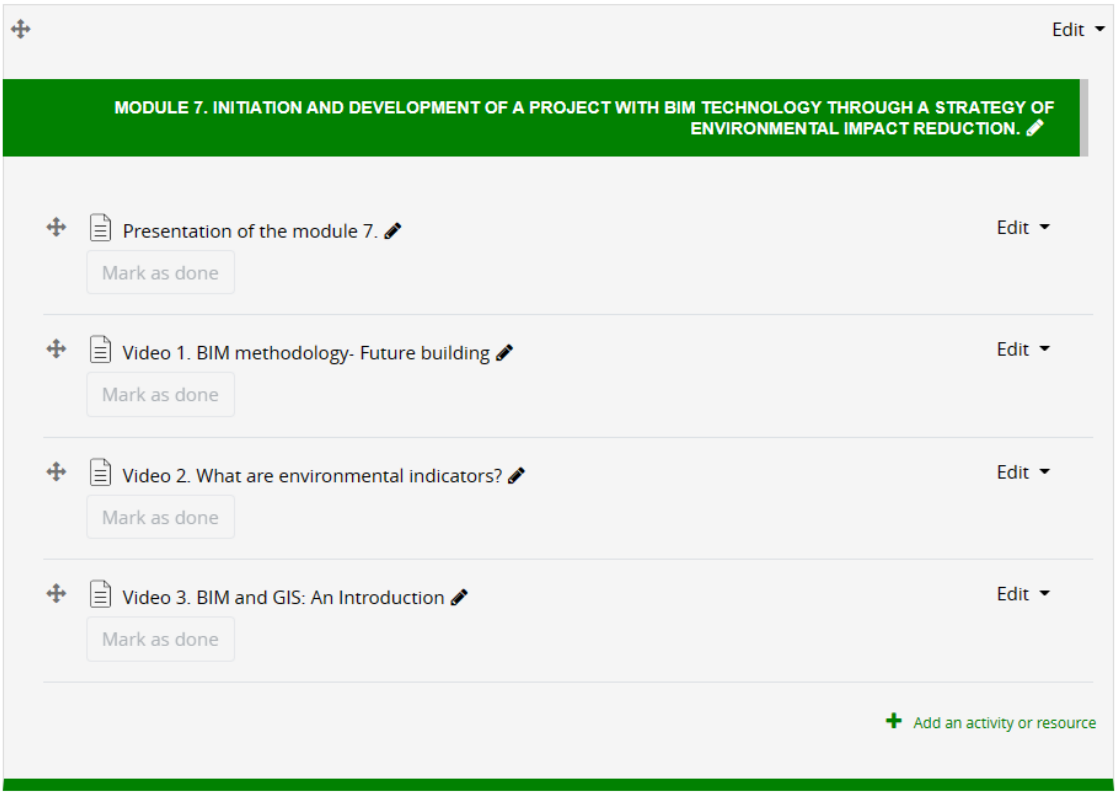
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Video 3. BIM and GIS: An Introduction
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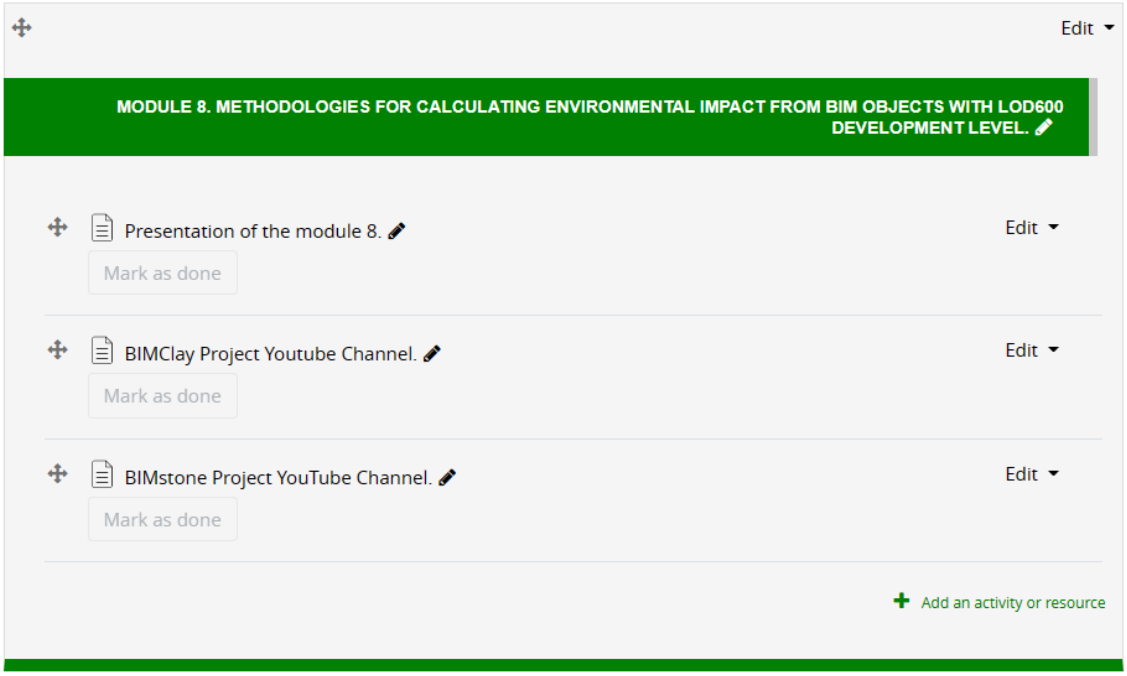
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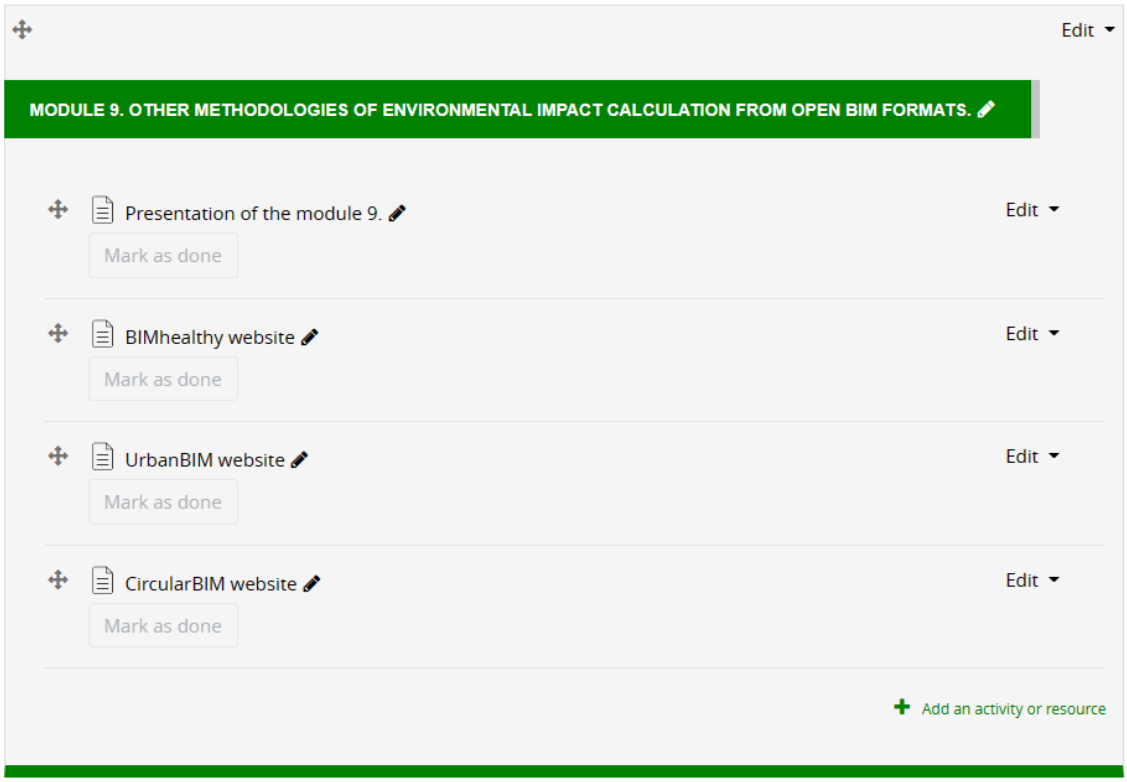
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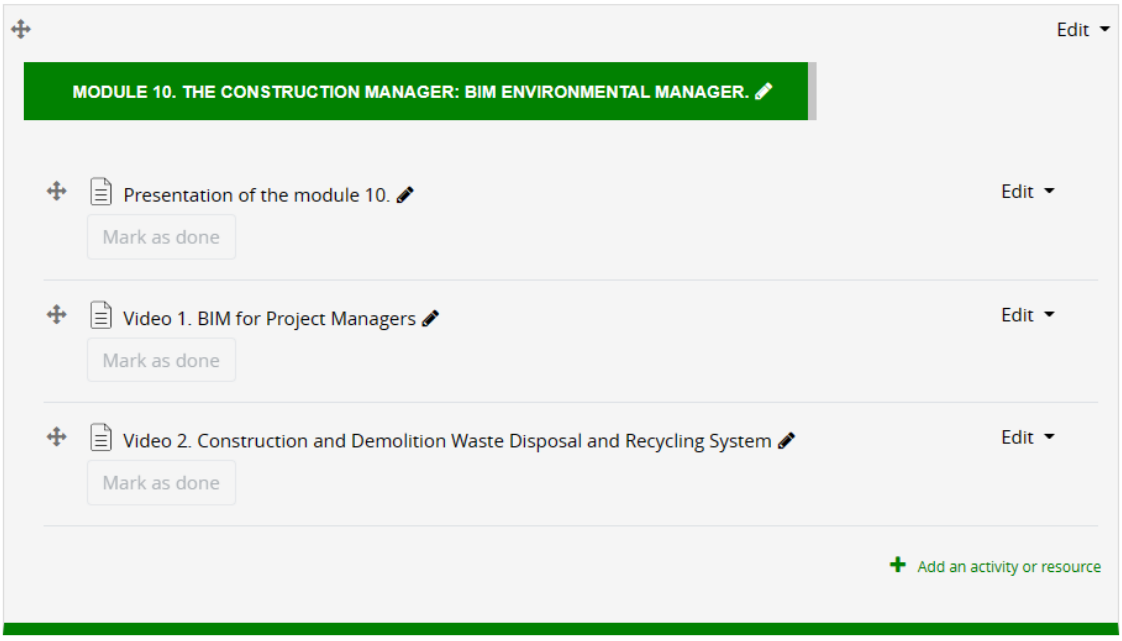
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3. PILOT COURSES

3.1. PILOT COURSE IN MURCIA (SPAIN)

The course in Murcia was held at the facilities of the Official College of Architects of the Region of Murcia (COAMU) on 1 December 2022. The dissemination of this activity was carried out through COAMU, since among its contacts there are many people belonging to the target group of this project.

Below, we can see the programme sent to the COAMU contacts via email.

PROPUESTA DE ACCIÓN FORMATIVA

DATOS DE LA ACCIÓN FORMATIVA

PROPUESTA DE ACTIVIDAD (curso, seminario, taller, jornada): Curso gratuito.

TÍTULO. BIMEPD. METODOLOGÍA BIM PARA LA INTEGRACIÓN DE DECLARACIONES AMBIENTALES DE PRODUCTO EN LAS ESTRATEGIAS DE CONSTRUCCIÓN SOSTENIBLE

METODOLOGÍA (presencial/ online /mixta/ grabación vídeo). Presencial

INTRODUCCIÓN (Aproximación al tema a tratar, de manera que sirva para justificar su importancia y necesidad).
La implantación del BIM en Europa es ya una realidad. En el norte de Europa, los edificios del BIM ya están conceptualizados, construidos, gestionados y explotados económicamente. En España, su uso generalizado es actualmente escaso, pero es un recurso creciente, ya que se ha establecido la obligación de utilizar BIM en los proyectos de infraestructuras para 2019. En España, existen implementaciones tecnológicas dentro del sector público, como la administración electrónica abierta, y hay varias organizaciones que trabajan para promover y acelerar la adopción de BIM en la industria de la construcción.

Por otro lado, la Comisión Europea se está centrando a corto plazo en el sector de la construcción para 2020, basándose en los criterios de crecimiento inteligente (desarrollo y economía basados en el conocimiento y la innovación), crecimiento sostenible (con una economía eficiente, competitiva y sostenible) y crecimiento inclusivo (garantizando la cohesión social y territorial a través del empleo), donde ya encontramos países como Francia, donde el cálculo de las emisiones de CO2 en los procesos constructivos ya es de obligado cumplimiento.

El COAMU junto al CTM tienen la firme convicción de transmitir estos conocimientos de alta importancia para los profesionales del sector de la edificación. El objetivo de esta formación gratuita del proyecto europeo BIMEPD es aumentar las competencias de los profesionales del sector de la arquitectura, especialmente en el uso de las tecnologías BIM, para aumentar la calidad del trabajo final, la permanencia de la obra y la sostenibilidad medioambiental, utilizando métodos sin materiales no reciclables y/o no dañinos, para mejorar la empleabilidad de los profesionales.

OBJETIVOS (Se formulan de forma rápida y hacen referencia a las metas finales que se quieren alcanzar con la acción formativa).
Proporcionar a los profesionales recursos innovadores e interactivos, con el fin de digitalizar los contenidos requeridos en su formación en tecnologías BIM y DAPs (Declaraciones Ambientales de Producto, EPD en sus siglas en inglés) para conseguir una cualificación mucho más completa y basada en la excelencia y las últimas tendencias del sector.

CONTENIDOS / PROGRAMA (Se trata de hacer un pequeño guion detallando el temario que se impartirá)
1. Conceptos básicos y tecnología BIM (Building Information Modeling) aplicada al (ACV) Análisis de Ciclo de Vida.
2. Regulación en torno a BIM y ACV.
3. Búsqueda e interpretación de bases de datos de DAP.
4. Modelado de objetos BIM con nivel de desarrollo 600 (LOD600) para la integración de datos de impacto ambiental.
5. Metodologías de cálculo del impacto ambiental a partir de objetos BIM con nivel de desarrollo LOD600.
6. Otras metodologías de cálculo de impacto ambiental desde formatos abiertos BIM.

DESTINATARIOS (Se especificará el perfil de las personas a las que va destinada la acción formativa)

Se dará prioridad a asociados al COAMU y mayores de 45 años.
Hasta completar aforo, también será destinatario cualquier profesional o estudiante relacionado con el sector de la construcción.

CONOCIMIENTOS PREVIOS (Describir los conocimientos que deben tener los participantes para poder realizar la acción formativa)
Conocimientos en construcción.

Nº ACONSEJABLE DE ALUMNOS
Número máximo hasta completar aforo en el aula de formación: 20 a 25 alumnos.

REQUISITOS TÉCNICOS (software necesario para poder realizar el curso y requisitos mínimos del ordenador)
No es necesario.

DIRECCIÓN WEB DE DESCARGA DEL SOFTWARE
Esta es la web del proyecto, pero no es necesario descarga ninguna documentación: https://bimepd.eu/

DOCUMENTACIÓN PARA ENTREGAR AL ALUMNADO (especificar el tipo de documentación: legislación, resumen curso, apuntes…)
Se facilitará la información/documentación durante el curso.

DURACIÓN EN HORAS LECTIVAS
2 horas (preferiblemente 11:00 a 13:00 o 12 a 14:00).

DISPONIBILIDAD DEL DOCENTE PARA IMPARTIR LA ACCIÓN FORMATIVA
2 horas (preferiblemente 11:00 a 13:00 o 12 a 14:00).

PROPUESTA DE FECHAS DE REALIZACIÓN
Jueves 1 de diciembre de 2022.

DATOS DEL PROFESORADO

NOMBRE Y APELLIDOS. PhD. David Caparrós Pérez

TELÉFONO 660730787

EMAIL david.caparros@ctmarmol.es

TITULACIÓN Doctor en Arquitectura.

EXPERIENCIA DOCENTE. Más de 25 proyectos nacionales e internationes de desarrollo de material docente con cursos de formación, y otros cursos de formación como freelance, entre los que se incluyen varios ya realizados previamente en el COAMU.

BREVE RESEÑA CURRICULAR (Se utilizará para el folleto del curso y la página web de la Escuela)
David Caparrós Pérez el responsable del departamento de Construcción Sostenible e Industria 4.0 de la Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales. Es Doctor Arquitecto, Arquitecto Técnico e Ingeniero de Edificación, así cómo Máster en Urbanismo y Máster en Formación del Profesorado.

Actualmente, como Gestor de Proyectos de Investigación del Centro Tecnológico del Mármol, ha participado activamente en iniciativas de I+D+i, destacando proyectos en nuevas tecnologías BIM y Análisis del Ciclo de Vida, y, a su vez, ha prestado sus conocimientos en edificación en labores de asesoramiento de proyectos arquitectónicos, rehabilitaciones, restauraciones, informes periciales y dictámenes, así como en cursos de formación especializados de varios ámbitos profesionales.

D.N.I. 48508308C

DOMICILIO Calle Moreno Cortés, n5, pl 2. 30110. Murcia.

OBSERVACIONES/ COMENTARIOS

FECHA DE LA PROPUESTA
Jueves 1 de diciembre de 2022.

The course had a total of 9 participants, external to the project. Both members of COAMU and members of CTM participated in the teaching of the classes.

The contents of this pilot course were as follows:

1. Basic concepts and BIM (Building Information Modeling) technology applied to (LCA) Life Cycle Assessment.

2. Regulation around BIM and LCA.

3. Search and interpretation of DAP databases.

4. Modeling BIM objects with development level 600 (LOD600) for the integration of environmental impact data.

5. Methodologies for calculating environmental impact from BIM objects with LOD600 development level.

6. Other methodologies for calculating environmental impact from open BIM formats.

The list of attendees to this event is in the "ANNEX I. Attendance list", only available in the private version due to data protection law.

3.2. PILOT COURSE IN WARSAW

The course in Warsaw was held at the facilities of the Civil Engineering Faculty, Warsaw University of Technology, in computer laboratory (room 020) on 25 October 2022. The invitation related to Pilot Course were sent by e-mails to engineers and managers from Polish construction industry.

Screen shot of the e-mail below.

--- Treść przekazanej wiadomości ---
Temat: Erasmus+BIMEPD - zaproszenie na pilotaż
Data: Tue, 11 Oct. 2022 13:16:49 +0100
Nadawca: Paweł Nowak <pawel.nowak@pw.edu.pl>
Adresat: Paweł Nowak <pawel.nowak@pw.edu.pl>

Szanowni Koledzy,

Wydział Inżynierii Lądowej PW kończy właśnie prace nad projektem Erasmus+ BIMEPD, pt:

"Adapted senor training program on BIM methodologies for the integration of EPD in sustainable construction strategies"

https://bimepd.eu/

Profil środowiskowy jest coraz ważniejszym kryterium w zamówieniach publicznych i prywatnych oraz w dokonywaniu wyborów przez konsumentów. Firmy i profesjonaliści mają różne mechanizmy akredytacji i komunikowania doskonałości środowiskowej swoich produktów i usług, w tym Deklaracje Środowiskowe Produktu (EPD). Te EPD zapewniają wiarygodny, odpowiedni, przejrzysty, porównywalny i weryfikowalny profil środowiskowy, który pozwala wyróżnić produkt przyjazny dla środowiska, w oparciu o LCA zgodnie z międzynarodowymi normami i ilościowymi danymi środowiskowymi. Projekt BIMEPD w swojej naturze polega na produkcji i rozwoju materiałów multimedialnych opartych na BIM i uwzględniających wyzwania związane z LCA i EPD materiałów budowlanych, do wykorzystania jako materiał szkoleniowy zarówno dla edukacji dorosłych dla profesjonalistów z branży architektonicznej, w celu spełnienia szeregu głównych celów.

Proszę przyjąć zaproszenie na pilotażowy kurs Erasmus+ BIMEPD,

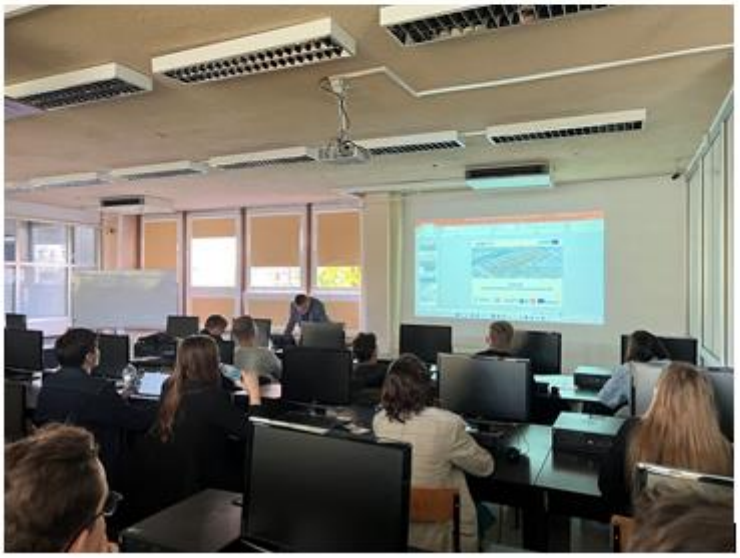
który odbędzie się na Wydziale Inżynierii Lądowej PW w dniu 25 października 2022 r. w godzinach od 12:00 do 14:00, Armii Ludowej 16, Warszawa, sala 020.

Zespół projektowy BIMEPD przedstawi wyniki projektu i zbierze Państwa opinię na temat wyników.

Pozdrawiam

Paweł Nowak

The course had a total of 23 participants, external to the project team. Paul Nowak, tutor and researcher at WUT – as Faculty representative - organised in teaching activities with target group.



Presentation and discussion with beneficiaries covers all BIMEPD modules prepared in the project, according to the common layout agreed by project Partners. Special input was given to the following subjects, to assure proper and relevant results of the questionnaire:

1. Basic concepts and BIM (Building Information Modeling) technology applied to (LCA) Life Cycle Assessment.

2. Regulation around BIM and LCA.

3. Search and interpretation of DAP databases.

4. Modeling BIM objects with development level 600 (LOD600) for the integration of environmental impact data.

5. Methodologies for calculating environmental impact from BIM objects with LOD600 development level.

6. Other methodologies for calculating environmental impact from open BIM formats.

4. BEYOND THE END OF THE PROJECT

After the completion of the project, during the month of February, BGBC will hold a BIMEPD project course at its facilities.

In addition, the profile of the partners ensures the continuity of this project and keeps all training materials up to date:

- BGBC has a specific research group related to EPD and LCA analysis applied to the construction sector.

- WUT has a specific research group related to BIM technologies.

- CYPE has a specific research group related to the development of software based on BIM methodology and the incorporation of environmental criteria in all processes. It also has a network of more than 70,000 contacts.

- CTM has extensive experience in the latest new technologies for sustainable construction applied to building design and refurbishment, as well as in the field of raw material efficiency.

- iED is very involved in the promotion of entrepreneurship and the development of innovative materials and methodologies for the training of professionals, with extensive experience in the participation and development of research projects focused on the inclusion of groups at risk of exclusion from the labour market, as is the case of older architects as reflected in the proposal.

- COAMU continually offers professionals in the architecture sector training courses to broaden their knowledge and improve their employability, including training activities that are at the technological forefront of architecture.

5. QUESTIONNAIRE

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

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

The questionnaire for the evaluation of the training activities carried out is presented below.

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

Feedback questionnaire of BIMEPD pilot courses

Project code: 2020-1-ES01-KA204-083128

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*Obligatorio

Questionnaire suplied by:

Tu respuesta

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

	1	2	3	4	5	
Not satisfied at all	○	○	○	○	○	Very satisfied

2. 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 activity's contents were of my interest.	○	○	○	○	○
I feel now better informed on various aspects related to the sustainable construction.	○	○	○	○	○
I now better understand the benefits of the BIMEPD project approach.	○	○	○	○	○
I feel that I have broaden my knowledge, competences and skills regarding BIM and EPD.	○	○	○	○	○

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

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Contents were clearly understandable.	○	○	○	○	○
Contents were interesting and motivating.	○	○	○	○	○
Training activity was well-organised and well-structured.	○	○	○	○	○
Overall atmosphere was pleasant.	○	○	○	○	○

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

	1	2	3	4	5
The co-ordination and the secretariat functioned:	○	○	○	○	○
The information you received before the training activity, intended to facilitate your participation was:	○	○	○	○	○
The organisation of the facilities used for the training activity were:	○	○	○	○	○
How was the available technical equipment during the training activity?	○	○	○	○	○

The agenda of the training activity was:	○	○	○	○	○
The material distributed during the training activity was:	○	○	○	○	○
The way you were received at the training activity was:	○	○	○	○	○
At the start of the training activity, the themes, the time available and the procedures were:	○	○	○	○	○
The time management of the training activity was:	○	○	○	○	○
The working conditions for the training activity were:	○	○	○	○	○

The general management of the training activity was:	○	○	○	○	○
The management of the development of the work in the training activity was:	○	○	○	○	○

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

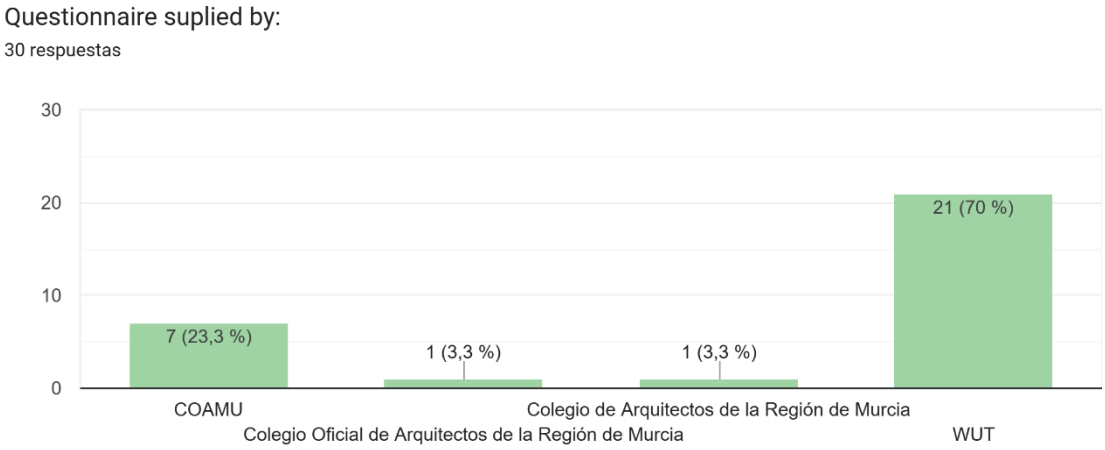
Tu respuesta

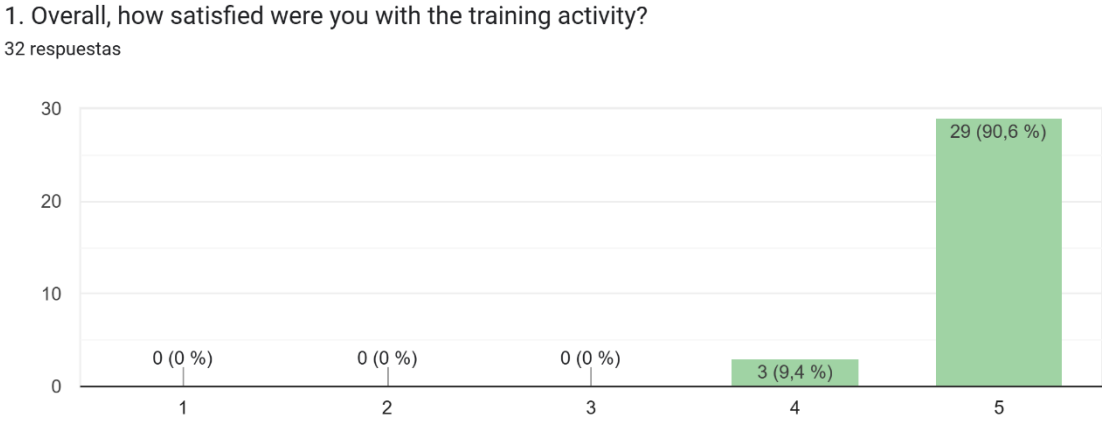
Erasmus+

"The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the

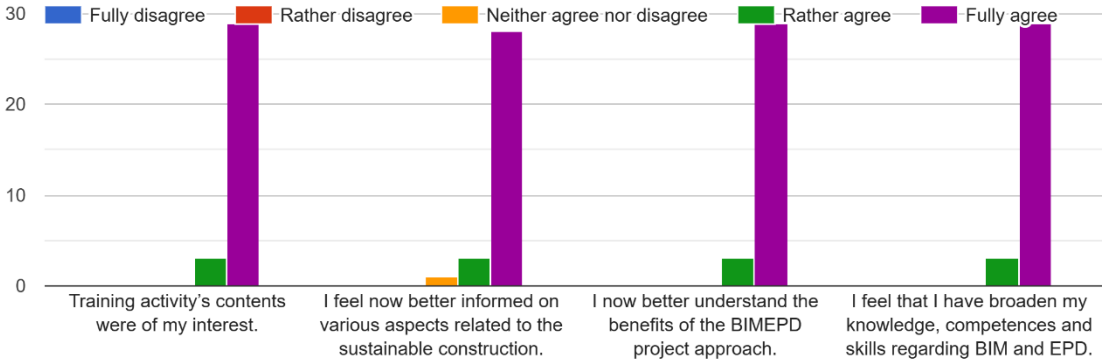
5.1. RESULTS

The results of the survey were as follows:

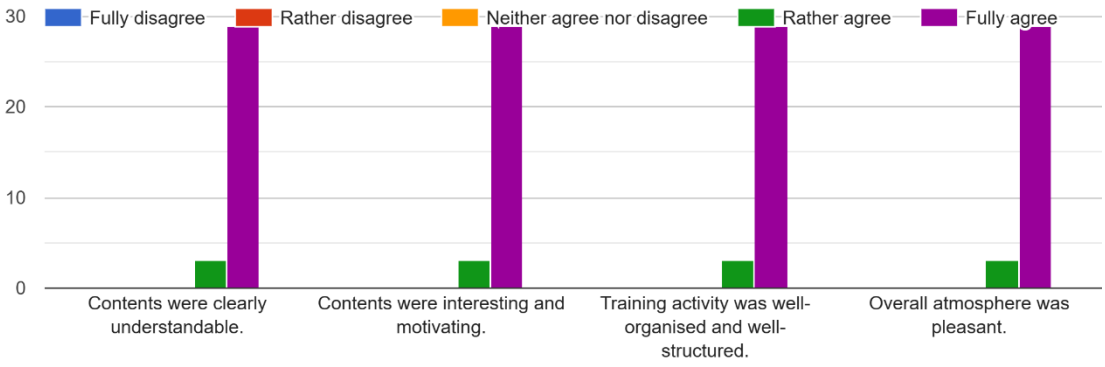


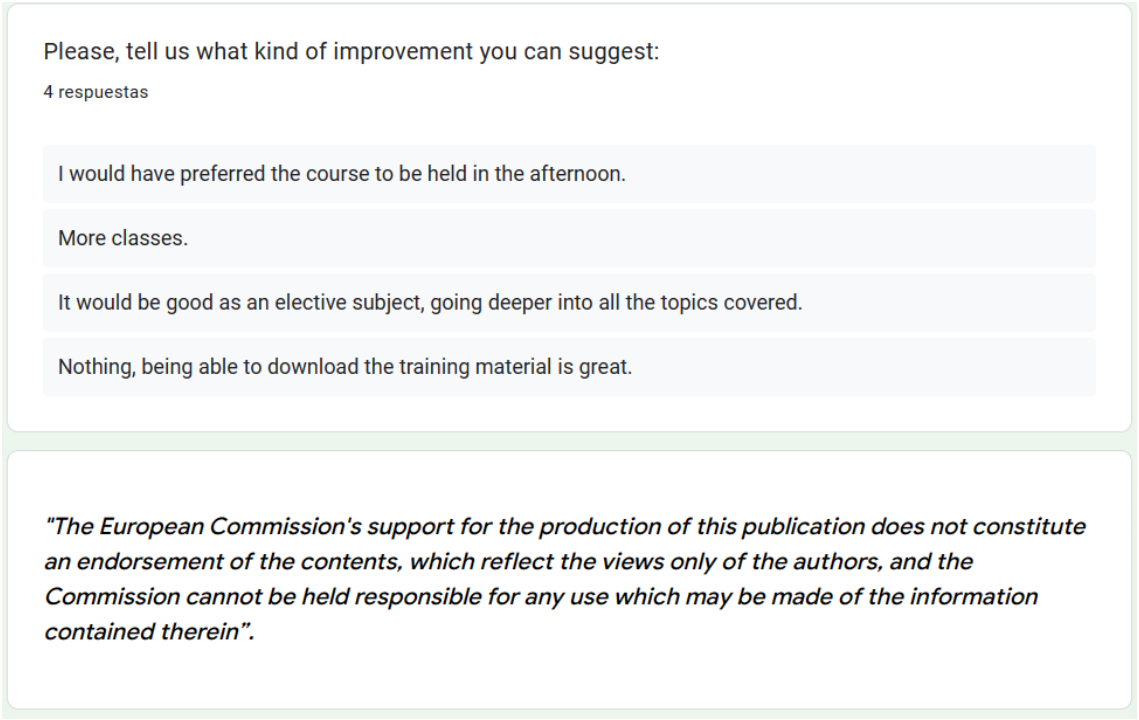


2. To what extent do you agree or disagree with the following statements?



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





5.2. CONCLUSIONS

The questionnaires have had a high participation rate, being 100% in the COAMU course (9 out of 9 participants answered the survey) and 91.3% in the case of the WUT course (21 out of 23 participants filled in the questionnaire).

In general, the results obtained were very good, with the highest possible scores, 4 and 5, for all the questions, except for one of them, which obtained a 3, specifically in the question on improving their knowledge of sustainable construction. This score may be due to the student's prior knowledge of the subject, as these are people with university degrees.

As for the last question on possible improvements, only a few users responded. The improvements suggested were a change in the timetable for the course, an increase in the number of BIMEPD classes and the introduction of this course as an optional subject in university degrees.

We can conclude, therefore, that the pilot course has been very well received by the participants and that they consider this material to be useful, as well as the fact that the training proposal is well organised and structured. In addition, one of the users highlights the advantage of having the opportunity to access the training materials developed in the BIMEPD project free of charge.

6. TECHNICAL IMPROVEMENTS

As a result of the improvements suggested by the partners and by those attending the courses, some of the contents of the topics developed in the project were improved. These were the following:

MODULE 1:

Slide 12: figure in Spanish → translated into English

MODULE 4:

Slide 69 and 70: had wrong module and chapter in the header → modified

MODULE 8:

Slide 22 was the same as Slide 21 → deleted

Slide 41 was the same as Slide 40 → deleted