CONDAP:



Green, digital and communication skills for mentors in construction apprenticeships

Brussels (BELGIUM), 11 November 2020











I. European Commission: Improving the construction sector human capital basis – policy perspectives





Improving the construction sector human capital basis – policy perspectives

Roman Horvath

DG Internal Market, Industry, Entrepreneurship and SMEs

C.1 Circular Economy and Construction



Commission President von der Leyen:

"The best investment in our future is the investment in our people. Skills and education drive Europe's competitiveness and innovation. But Europe is not yet fully ready. I will ensure that we use all the tools and funds at our disposal to redress this balance."



2019 Commission Communication:

"The European Green Deal"

- a set of policy initiatives with the overarching aim of making Europe climate neutral in 2050
- the twin challenge of the green and the digital transformation; upskilling and reskilling



2020 Commission Communications:

"A New Industrial Strategy for Europe"

"A SME strategy for a sustainable and digital Europe"

"Identifying and addressing barriers to the Single Market"

"European Skills Agenda for sustainable competitiveness, social fairness and resilience"



2020 Commission Communication:

"A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives"

- doubling the energy renovation rate by 2030
- skills, (financing and enabling measures)





Blueprint for Sectoral Cooperation on Skills – Construction Sector (ERASMUS+, COSME)

http://constructionblueprint.eu

- a 4-year long stakeholders-led project (2019-2022)
- a partnership of VET providers and companies and other stakeholders



- a sectoral strategy for skills intelligence and labour-market relevant skills development
- improving the sector human capital basis a new generation of digitally aware multi-skilled workers (digitalisation, energy efficiency, circular economy; occupational health and safety)



- Attractive curricula
- Innovative training methods
- National European (good practice, recognition)

Support of vocational education and training, in particular apprenticeships, is crucial to facilitate smooth school-to-work transitions and to increase the availability of skilled workforce.



- Construction is competing with other sectors to attract young talent.
- It has to attract and retain a diverse group of multi-talented people.
- Negative image, a lack of skills for the future challenges.
- New technologies, green construction and digitalisation set the future skills demand.



European Construction Sector Observatory

https://ec.europa.eu/growth/sectors/construction/ob
servatory en

- > launched in 2015
- individual country profiles, fact sheets on individual national and/or regional policy measures and analytical reports
- Analytical Report Improving the human capital basis

https://ec.europa.eu/docsroom/documents/41261



Thank you for your attention!

Questions?

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II. Presentation of the CONDAP Vocational Open Online Course (VOOC) and its learning units









ENERGY EFFICIENCY AND SUSTAINABLE CONSTRUCTION

CONDAP OPEN EDUCATIONAL RESOURCES

Elisa Peñalvo López (UPV) Javier Cárcel Carrasco (UPV) 10 November 2020



EUROPEAN
VOCATIONAL
SKILLS WEEK
2020







This learning unit "Energy efficient and sustainable construction" aims to introduce students to the field of energy efficiency in construction, to show its importance, foundations and the European directive on the subject.



Why is this a current issue?

- Buildings are responsible of consuming more than one third of total end-use energy
- Cause almost the fifth of total greenhouse gas emissions
- Account for more than half of the electricity demand
- Consume twenty percent of the water

To reduce energy use in buildings is a climate change imperative







Which tools do we have at our disposal to achieve this?







- ☐ Third Industrial Revolution
- New information technologies and digitization tools
- ☐ Renewable technologies

- Energy refurbishing of buildings
- Nearly-zero energy buildings

- ☐ The European Legal Framework
- Objectives set by the European Union for Energy Efficiency in the Directive (EU) 2018/844



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The learning unit consists of lecture notes divided into 5 lessons and evaluation exercises



Lesson 1 & 2

Introduction to the energy efficient building concept and the applicable European directive.



Lesson 5

Shows characteristics of energy certificates and provides some insights about energy management and monitoring systems and energy remote management.



Lessons 3 & 4

Focusing on basic principles of energy efficiency in buildings regarding passive and active building design.



Practical exercises

- Theoretical exercises (multiple choice questions, short questions, timed categorization exercises & FAQ)
- 3 Case studies





Unit Lessons





CENDAP LESSON 1 EUROPEAN LEGAL FRAMEWORK



The content of this lesson will introduce you to the context surrounding energy efficiency in buildings and the impact of construction in the environment.

It will show you the European legal framework for sustainable building



Lesson 2 **SUSTAINABLE** BUILDINGS



This lesson contains basic concepts and factors to be considered in a nearly zero consumption building according to European directive.





Lesson 4

RENEWABLE ENERGY SOURCES (ACTIVE DESIGN)



In this lesson you will learn about the second part of active design regarding the generation from renewable energy sources and the different generation systems available for buildings. It is also presented the software PVGIS to calculate the photovoltaic system energy production.

PRINCIPLES OF ENERGY
EFFICIENCY (PASSIVE & ACTIVE
DESIGN)



You will learn the basic principles of energy efficiency in buildings related to passive and active building design. With respect to passive design, a distinction will be made between those solutions applied to the projection of the building and those applied to the interior design. In the active design you will study more efficient consumption systems. In addition, the use of the PVGIS software will be introduced.





Lesson 5 ENERGY CERTIFICATION



In this lesson you will learn about the characteristics of an Energy Performance Certificate (EPC). You will also learn about the energy management and monitoring systems (BMS and EMS) and the energy remote management. Moreover, this unit contains the characteristics and constructive data of two real cases of energy efficient buildings.



THANK YOU FOR YOUR ATTENTION

EUROPEAN
VOCATIONAL
SKILLS WEEK
2020





DISCUSSIO





-Do you think energy efficiency measures are enough to reduce GHG emissions in construction? (Renewables?)









LEARNING UNIT 2

DIGITALISATION OF CONSTRUCTION

VILNIUS BUILDERS TRAINING CENTRE





Learning Unit 2 was prepared by Vilnius Builders Training Centre from Lithuania.

It is one of the largest vocational education provider in Lithuania, which trains construction specialists. School counts a history over 70 years and till nowadays offers those specialities, which are mostly needed for labour market.

And also more and more of learning process is carried out using new digital tools.

ABOUT THE LEARNING UNIT

This learning unit introduces the learner into digitalization of construction – Building Information Modelling methodology and project management using digital tools.

Learning Unit is divided into five lessons:

Lesson 1 – introduces learner to the what Building Information Modelling is and its history.

Lesson 2 – shows how BIM works and levels of it. Also in this lesson benefits of BIM are explained.

Lesson 3 – introduces how BIM works in a construction and what software is used.

Lesson 4 – explains how BIM technologies can be used in projects management

Lesson 5 – gives learner an opportunity to know what tools, used in construction everyday can be connected to BIM technology.

BIM

Building Information Modelling is digital representation of physical and functional characteristics of a facility creating a shared knowledge resource for information about it and forming a reliable basis for decisions during its life cycle, from earliest conception to demolition.

BIM software must be capable of representing both the physical and intrinsic properties of a building as an object-oriented model tied to a database. In addition most BIM software now features rendering engines, an optimized feature specific taxonomy and a programming environment to create model components.







BIM BENEFITS

75% of companies that have adopted BIM reported positive returns on their investment with shorter project life cycles and savings on paperwork and material costs.

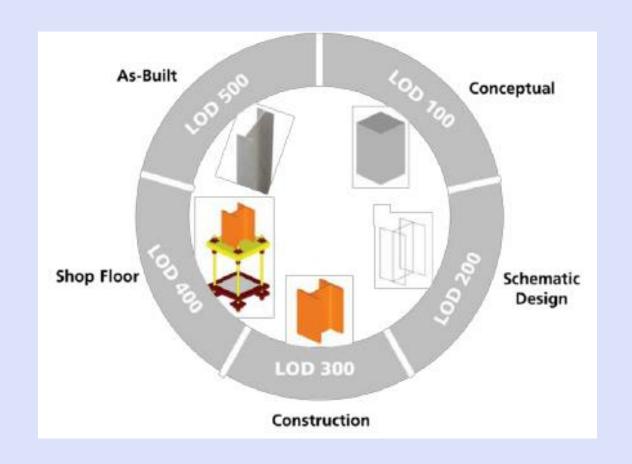




BIM LEVEL OF DEVELOPMENT (LOD)

LOD built for various stages of design, 3D visualization, construction-caliber quantities, scheduling, estimations, on-site production control and fabrication.

The BIM's Level of Detail (LOD) defines how the 3D geometry of the building model can achieve different levels of refinement, is used as a measure of the service level required.







LEVELS OF BIM

Level o BIM – Basically it is unmanaged computer aided design (CAD).

Level 1 BIM – focuses on the transition from CAD information to 2D and 3D one.

Level 2 BIM – Managed 3D environment with data attached, but created in separate discipline-based models.

Level 3 BIM – A single collaborative, online, project model with construction sequencing (4D), cost (5D) and project life-cycle information (6D).



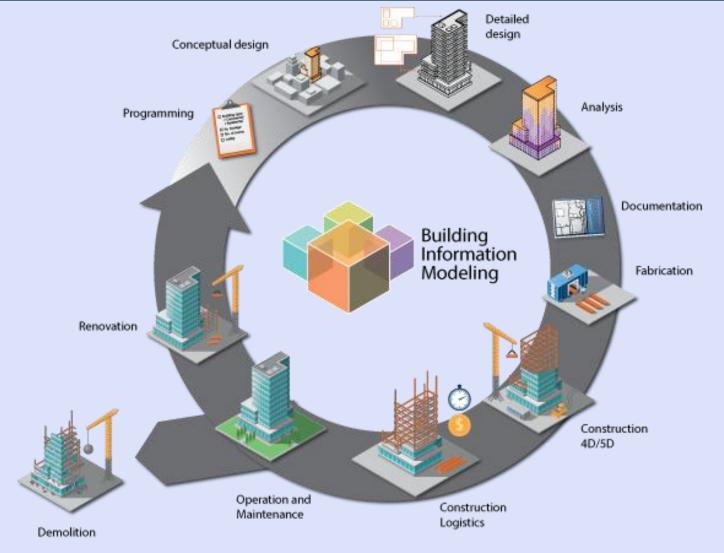




BUILDING LIFE CYCLE IN BIM

BIM let to organize BIM process:

- Programming
- Conceptual design
- Detailed design
- Analysis
- Documentation
- Fabrication
- Construction 4D/5D
- Logistic
- Operation and maintenance
- Renovation or demolition

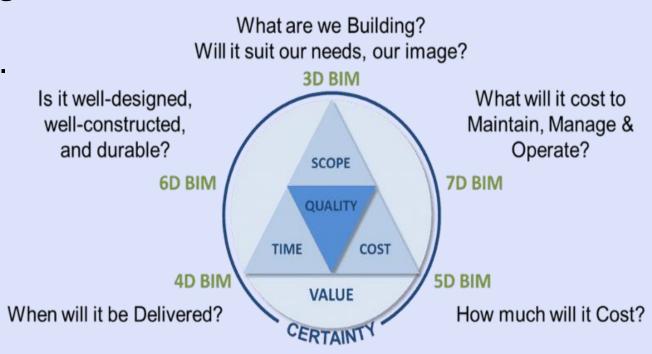






THE FUTURE OF CONSTRUCTION PROJECT MANAGEMENT

BIM are powerful tools for curbing the most common problems in construction and project delivery. The use of BIM in construction project management would be inevitable as it would give the edge to delivering high quality projects on time.



Are we getting good Value for money? Are our Risks being effectively managed?





ADDED VALUE OF BIM

- Makes the process during construction more effective and efficient
- Improves safety during construction and throughout the building's lifecycle
- Parties have a clear understanding of the project objectives and interfaces with other related trades
- Assists in design and the coordination of designs
- Increase and secure the quality of the building process and the final product
- Supports the cost and lifecycle analysis of the project







DIGITAL TOOLS USED IN CONSTRUCTION



- BIM
- Project Management Software
- Smart Buildings
- HD Surveying and Geolocation
- 3D Printing
- Wearables
- Tool Tracking Devices
- New Materials
- Internet of Things
- Digital Collaboration and Mobility
- Virtual reality, VR, AR, mixed reality



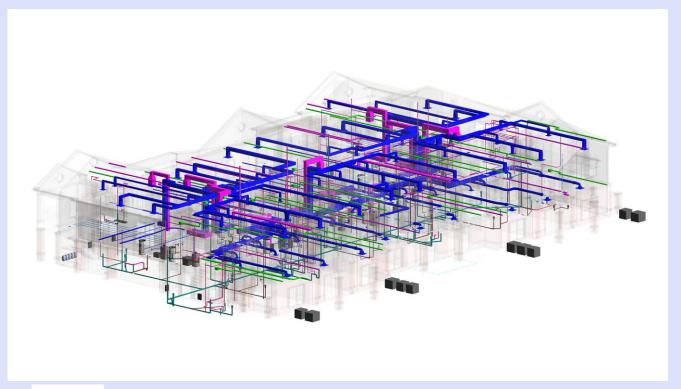


JOIN FOR CONDAP OPEN LEARNING COURSE

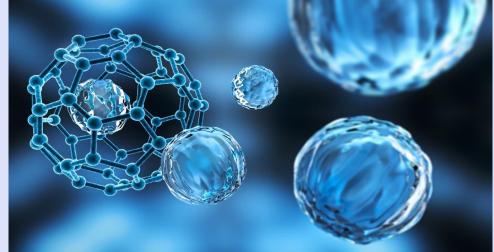
If You want to learn more about digitalization in construction join the CONDAP open learning

course:

https://www.openlearning.com/courses/condap-vooc/?cl=1











Thank You for Your attention and lets meet in Q&A session and lets touch these questions:

✓ Could You identify some of the current reasons of BIM implementation in the construction sector?

✓ How many BIM levels are you familiar with / have you used in your work?











LARISA PUK



Generic unit, suitable for:

- ✓ Company mentors involved in construction apprenticeships
- ✓ Employers in the construction sector
- ✓ Construction workers with responsibilities in training tasks
- ✓ Training providers
- ✓ Apprentices in the construction sector
- ✓ Representatives and associations of employers and employees in the construction sector
- ✓ Stakeholders and policy makers.

Purpose:

- ✓ To amplify the organisational, management and communication skills
- ✓ To underpin knowledge and skills for effective use of digital technologies and platforms.

Structure:

- ✓ Video introduction
- ✓ Theoretical lessons
- ✓ Practical exercises and knowledge check
- ✓ Case studies.

Development process:

- ✓ Research to identify the required, knowledge, skills and competencies
- ✓ Individual interviews
- ✓ Learning Outcomes.

Learning Outcomes:

- 1. Be able to use the electronic means of communication and collaboration tools
- 2. Know and understand the energy efficiency and sustainable construction digital solutions
- 3. Be able to apply the knowledge and Building Information Modelling (BIM) and transfer it to apprentices
- 4. Be able to use other digital tools and software to support apprentices in construction

Units defined by Learning Outcomes:

Unit 1 – Learning Outcome 2

Unit 2 – Learning Outcomes 3 and 4

Unit 3 – Learning Outcome 1

Knowledge	Skills	Competence
 Knows/Aware of: Various methods of communication (written, verbal, non-verbal, faceto-face, remote) Virtual interaction, remote connection tools for mentorapprentice communication 	Ability for:	 Able to: Embrace digital technologies for communication Use digital technologies and collaboration tools for communication with apprentice(s)
 Communication through virtual environment for immersive learning Digital technologies for communication Collaboration tools and platforms for communication. Social media platforms for collaborative work. 		 Understand apprentice's job profile and skills requirements Understand the role of apprentice's manager Identify specific areas of training based on the learning requirements.

Description	This learning unit introduces the learner to relevant digital tools for effective communication and	
	collaborative work.	
Overall Learning Outcome	Learners should learn the use and application of digital technologies applied to communication	
	and collaborative work in virtual environments such as electronic platforms.	
Recommended Knowledge	Digital tools and platforms aim for effective communication	
EQF level	5	
Contact hours	5 + 2 hands-on hours (practice exercise using collaborative platforms)	
ECVET credits	1	
Training Content	Lesson 1. Introduction	
	Lesson 2. Communication methods in virtual environments.	
	Lesson 3. Digital technologies for communication.	
	Lesson 4. Collaboration tools and platforms for communication.	
Assessment	One assignment: case-study	
	Evaluation test: 5 open-ended questions and/or multiple choice test	

STRUCTURE

- **Lesson 1.** <u>Introduction</u> is about the concept of communication, its purpose., style and way of delivery. From verbal and non-verbal, formal and informal, written and spoken, communication is the key factor in the business environment.
- **Lesson 2.** Communication methods in virtual environments takes you into the virtual world of conducting communication and managing your groups and teams.
- **Lesson 3.** <u>Digital technologies for communication</u> digital technologies for communication, learning opportunities and interaction on social media. The lesson also addresses an important aspect of etiquette of communication in virtual environment.
- Lesson 4. <u>Collaboration tools and platforms for communication</u> collaboration toolset and various collaboration platforms. These are categorised into communication tools, resource management tools and workflow tools.





LESSON 1 OBJECTIVES

- What communication is
- Types of communication
- Communication skills
- Levels of communication
- Types of organisational culture
- Mentoring process
- Mentoring overview
- Practical exercises





COMMUNICATION IN VIRTUAL ENVIRONMENT

Modes of communication:

- In-person
- Phone
- Email
- Video conferencing
- Instant messaging and chat.

Match the tasks at your department or organisation to each of these modes and justify your choices

Communication strategy:

- The right choice of communication medium in-company platforms versus social media
- Corporate communication policy
- Communication etiquette
- Realistic goals
- Keeping updates on a regular basis
- Scheduling regular meetings
- Electronic diaries, including your own







PRACTICAL EXERCISES



- 1. Assess apprentice's profile in terms of:
- previous knowledge and skills
- current knowledge and skills
- further needs.
- 2. Based on the collated details, draft apprentice's personal profile and development plan.
- 3. Draft an indicative communication schedule with timescales and activities.



EXAMPLES OF CASE STUDIES

CASE STUDY 1



BAUER

Challenges

- Sweep away yesterday's ways of working
- Improve teamwork and enhance productivity
- Make the business more agile and faster to market

Solutions

- Installed cloud-based collaboration system
- Made it easy to hold virtual meetings
- Put video endpoints in five sites

Results

- Reduced travel costs by 50 percent
- -Increased productivity 30 percent
- Cut time to market by 10 percent

"Getting to market 10 percent faster is an advantage over our competitors."

Anyone in a multi-site business would recognize the meeting headaches at BAUER. Hours were lost travelling between sites for face-to-face meetings, totaling many weeks of wasted time. Today a faster, more agile business keeps both employees and customers more content.

Operating globally, BAUER builds irrigation and wastewater machinery. Until recently, workers in its Austrian and German core businesses communicated the old-fashioned way. Sometimes they spoke on the phone. Sometimes they used simple video tools like Skype. More often than not, they met in person — spending hours traveling in cars or trains.

So much time out was a chore and did little for the business. Stopping things from moving quickly, it was horrendously costly too. When the old phone system expired, Kapsch, the group's IT partner, proposed something better: Cisco's collaboration solutions.

Cisco video collaboration tools have had a truly transformational effect on decision-making and ways of working.

The fact that it's quicker and easier to meet over video is helping move projects along. People are working better

together, setting up virtual meetings and sharing papers, plans, and visuals, and recording proceedings for later review.

Andreas Schitter, chief finance officer (CFO) at BAUER says, "You don't need to spend six hours in a car to attend a meeting. When people get together the discussion is interactive and effective. Travel costs have dropped by 50 percent." The Cisco technology is trimming expenses in other ways. Because it's delivered from the cloud, BAUER only pays for what it uses

BAUER has become a more agile business. "Getting to market 10 percent faster is an advantage over our competitors," says Schitter. It's not just the business that wins. Employee satisfaction has gone up 10 percent. They complete work more quickly and don't have to waste so much time traveling.

"You can arrange meetings and share documents fast using Cisco WebEx®," says Christian Bucher, IT Administrator. Cisco gateways keep content safe, and there's no need for a multipoint control unit. In-person communication has seen email drop five percent. People meeting through video rather than traveling has raised productivity 30 percent.

BAUER has introduced the collaboration tools in Austria and four subsidiaries in Germany. Next, it wants to extend the solution to Brazil, Hungary, and Slovakia, and integrate it with other business applications.





CASE STUDY 2

Coca-Cola Latin America - a virtual programme to develop organisational capability and capacity for Managing Virtual Teams

Background

In response to a business imperative to minimise cost, avoid duplication and leverage capability, Coca-Cola Latin America began the implantation of a virtual team structure for elements of its commercial products supply technical groups based across Latin America. This was prioritised as a strategic initiative for Coca-Cola. In 2005 a framework and 3 year plan was developed to support the implementation and management of virtual teams across agreed areas of the organisation.

Business Issues

Two years on, a set of core competencies for working in a virtual environment had been established, and teams had undergone a series of assessments to establish any gaps. While the outcomes of the assessments were very positive, there were areas that could be improved on. It was also recognised that the business had never invested in developing its leaders' capability to work in a virtual environment.

The human resources function, in conjunction with a core group of managers who were involved in implementing and managing virtual teams, sought a training programme.



The programme needed to help them assess and validate their current virtual team leadership practices and experiences, matching it against global best practice and set action plans to move to the next level of high performance in virtual team working and virtual team management.





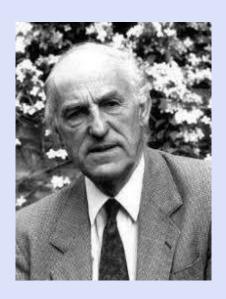
CASE STUDY 3

The Team Roles

There are various categorisations of Team Roles. This case study is based on BELBIN categorisation.

Raymond Meredith Belbin is an English researcher and management consultant best known for his work on management teams. He is a visiting professor and Honorary Fellow of Henley Management College in Oxfordshire, England.

- Nine clusters of behaviour
- Greater self-understanding of strengths, weaknesses and additional information, which leads to more effective communication between colleagues and managers.







Any questions?

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INSTRUCTUS







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QUESTIONS FOR THE WORKSHOP

Question 1 - Do you feel the Unit 3 covered all organisational management and communication skills?

Question 2 - What are the biggest challenges mentors have when supervising or leading apprentices in the construction sector?



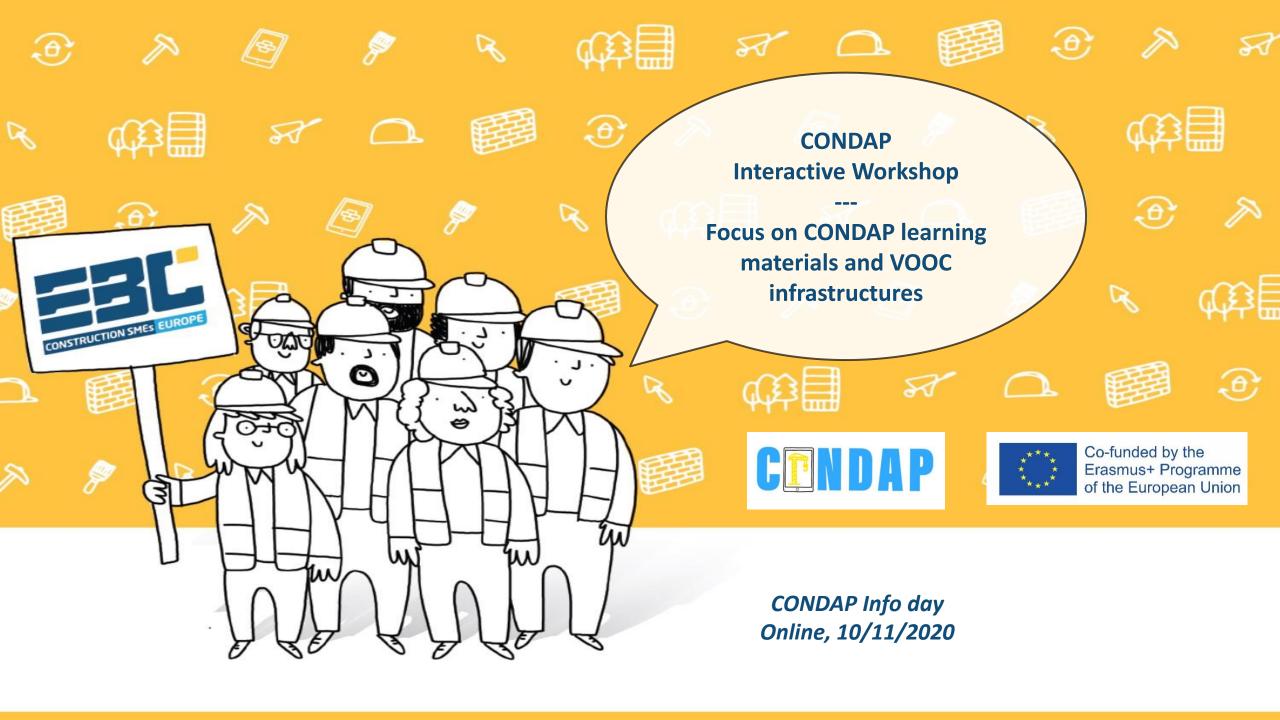






III. Workshop and Q&A on green, digital and communications skills











THE CONDAP VOOC

Last October, the **CONDAP Vocational Open Online Course (VOOC)** has been launched!

The course is now available and freely accessible online, at this link on an open learning platform.

All the material is available in five languages: **English, French, Spanish, Lithuanian and Greek.**













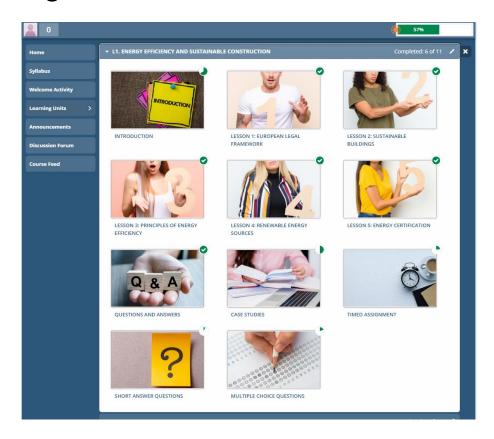






THE CONDAP VOOC

As you have already seen today, the course is divided into 3 learning units, each one including:



- •Introductory videos
- •<u>Lecture notes</u> (articulated in thematic & compact lessons, easily downloadable in PDF format)
- Case studies
- •Q&A and exercises (multiplechoice and/or short questions & timed assignments)







PILOT-TESTING

In the months to come, the VOOC will be **<u>pilot-tested</u>** by relevant stakeholders from the construction and VET worlds.

- The VOOC will be then fine-tuned it in accordance with the feedback received.
- Help us shape the final look of the CONDAP VOOC! All you will need to do is to test the VOOC at your own pace and to complete an <u>easy-to-fill questionnaire</u>, <u>available at this link</u>.









UNIT 1 - QUESTIONS

The questions for CONDAP learning Unit 1 "Energy Efficiency and Sustainable Construction", prepared by our colleagues of the Polytechnic University of Valencia (UPV) are the following:

- What's the role of education in a sustainable scenario?
- Do you think energy efficiency measures are enough to reduce Greenhouse Gas emissions in construction?









UNIT 2 - QUESTIONS

The questions for CONDAP learning Unit 2 "<u>Digitalisation of Construction"</u>, prepared by our colleagues of Vilnius Builders Training Centre (VSRC) are the following:

- Could you identify some of the current reasons of BIM implementation in the construction sector?
- How many BIM levels are you familiar with / have you used in your work?







UNIT 3 - QUESTIONS

The questions for CONDAP learning Unit 3 "Organisational, Management & Communication Skills", prepared by our colleagues of Instructus are the following:

- Do you feel this unit covered all organizational, management and communication skills?
- What are the biggest challenges mentors have when supervising or leading apprentices in the construction sector?









VOOC STRUCTURE - QUESTIONS

The questions regarding the **CONDAP VOOC infrastructures**, prepared by our colleagues of **EXELIA** are the following:

- Have you found the CONDAP VOOC easy to navigate? Would you like us to enable more vivid infrastructures, such as videos, within it?
- What do you expect or wish to see during your navigation in the CONDAP VOOC (or, more broadly, in an online course)?





Thank you for your attention!



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