PR3 User-guide for integration into online platforms

KNOWBOND

Boosting Knowledge of Adhesive Bonding Personnel

Project No. 2021-1-PT01-KA220-VET-000033229

Project Result	Due Date	Leading Organisation	Dissemination Level
PR3	30 October 2023	EWF	Public
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Version 2	04.10.2023	-	-
Version 3	24.11.2023	-	-

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1. Executive summary

The "USER GUIDE FOR THE INTEGRATION INTO ONLINE PLATFORMS" proposes a step-by-step approach for the integration of the Specific European Adhesive Bonding Training (SEABT) course modules, contents and digital tools within specific learning platforms, such as, Moodle, EWF Modular System and TEAMS. This last, although not being a platform, is mentioned in the guide as a useful tool to support the SEABT training experience.

The guide target groups are potential teachers and trainers for the online specific adhesive bonding training courses.

The approach used to develop the guide was focused on the identification of the learning contexts and tools employed by the project partners. From there the guide evolve to a detailed description of the operational steps to be followed for the integration of KNOWBOND results into the identified learning platforms.

An important conclusion was that the digital learning resources developed for the SEABT course have the potential to be integrated in more and further learning platforms, in alignment with the needs and available tools of the different education providers.

2. Introduction

The "USER GUIDE FOR THE INTEGRATION INTO ONLINE PLATFORMS" is a dedicate guide for the European Qualification System in Adhesive Bonding (EAB) training, which aims at enabling the integration of the Specific European Adhesive Bonding Training (SEABT) course contents, developed resources and Competence Units within a diversity of existing learning platforms.

The methodology and starting point of the guide, consisted in the mapping of partners learning platforms (e.g., Wiseflow, Blackboard, Moodle or other similar ones) that could be considered to encompass learning activities and end-to-end digital assessment for wider implementation across all partner organisations.

The user-guide target groups are teachers and trainers delivering, or aiming to deliver, online adhesive bonding contents to their trainees independently of the supporting learning platform.

This guide addresses the required steps for the integration of KNOWBOND results into the following platforms:

- **MOODLE** LMS (v4.1) - "essential tools for online courses"
- **TEAMS** - an example of learning experience using SEABT digital resources in teams
- **MODULAR SYSTEMS** - storage and mapping of European/International courses and its contents

In terms of structure the guide provides information about:

- Learning platforms functionalities
- SEABT course structure and content
- SEABT digital and innovative learning and assessment tools
- Steps for the integration of the innovative tools and SEABT Competence Units
- Final considerations about the integration of KNOWBOND results into the most used learning and management platforms

3. Mapping of learning platforms and their functionalities

3.1. Moodle Platform

If you intend to implement the training course for the SEABT (Specific European Adhesive Bonding Training) qualification using Moodle (https://docs.moodle.org/403/en/Features) here are some aspects needed to be taken in consideration.

The training course for the Qualification SEABT was designed for a blended learning methodology. The theoretical training can be delivered mostly via e-Learning, while the practical training can be implemented in the classroom, following the practical exercises delivered by the trainer.

Moodle includes several **resources** and **activities**, here we recommend some to set up your SEABT online course:

RESOURCES

Resources are static content, such as text pages, PDF files, PowerPoint presentations, audio and videos that you can make available to trainees in the context of the course. The purpose of the resources is to provide information or materials for the student to consult, download to the PC or print. The main difference between Moodle resources and activities is that, generally, resources involve little or no interaction with the student. **SEABT digital resources integration into Moodle are described in SEABT digital and innovative learning and assessment tools and Operational Steps for the integration in MOODLE sections of this guide.**

The Moodle's resources should be used to make the updated European Adhesive Bonder Curricula available, a course manual in PDF, a presentation with voice narration in PowerPoint, a link to a website with relevant information, and a video on YouTube, among others.

- **Page**

A Page is a resource used to create one unique page which can have formatted text, tables, images, hyperlinks, videos and other multimedia elements. It is recommended for writing a welcome message and a short introduction to the SEABT course. **A preview of the SEABT course page is given Operational Steps for the integration in MOODLE section of this guide**

The page is useful to provide participants with important information and content such as a welcome message, a schedule of activities or a list of recommended readings. Using the Page may be more convenient than providing information in a file, using the file resource, as the page is accessed quickly from any device, without the need to use software that students may not have installed (Word or PDF, for example) and may contain links to other pages, audio, video, etc.

- **Label**

A Label is a resource used to insert text, images or other multimedia elements in the sections of the main page of the discipline. It can be used, for example, to highlight or separate areas of work within the same topic or week, facilitating thus the identification of different themes or subjects. It is useful for organizing different elements (resources and activities) included in the course. Is very useful for grouping resources and activities within a topic, creating, for example, tabs with the titles "Course information", "Study Material", "Activities", etc.

Labels can also be inserted without content, only with spaces or blank lines (by pressing Enter), to create spacing between those items. Although a label can include long text with descriptions or instructions, you must avoid overloading the course page too much with long texts, as it will be more difficult to locate and access the remaining resources and activities of the course.

ACTIVITIES

Activities are interactive pedagogical content such as quizzes, discussion forums and works, which provide the interaction of trainees with each other and with the trainer, with contents and with the learning management system. Almost all activities allow evaluation and can contribute to the final grade obtained by the trainee in the course. **The SEABT activities are integrated into the Moodle course structure, given in Operational Steps for the integration in MOODLE section of this guide.**

In Moodle, you can use several activities and, therefore, the selection of the activity should take into account the pedagogical objectives, the characteristics of the trainees and its purpose.

Here we suggest some Moodle activities to be included in the SEABT courses:

- **BigBlueButton**

BigBlueButton allows the creation from within Moodle of links to real-time online classrooms, it is an open-source web conferencing system for distance education. It is possible to specify conference times, which are then added to the calendar, and, if allowed in the Learning Management Systems (LMS) installation, the sessions may be recorded for viewing later.

Note: For data protection reasons, BigBlueButton is disabled by default. Administrators must enable it from Site administration > Plugins > Manage activities and then check the box to accept the data processing agreement.

- **SCORM**

The SCORM activity allows trainers to upload any SCORM or AICC package to a course.

SCORM (Sharable Content Object Reference Model) is a collection of specifications that enable interoperability, accessibility and re-usability of web-based learning content. It is necessary to upload the digital training materials to the LMS and define the essential functions to organize and monitor training on the platform. **As described in SEABT digital and innovative learning and assessment tools sections of this guide, the SEABT SCORM files, it can be downloaded from the KNOWBOND project website.**

After downloading the training materials, in the course in Moodle, with the editing mode turned on, it should be selected 'SCORM Package' from the activity chooser.

A name needs to be attributed and, if required, a description. In the Package section, it is now possible to upload the SCORM package.

Expand the other sections to select the wanted settings, in particular the Appearance and Attempts management sections.

- **Assignments**

Assignments allow trainees to submit work to the trainer for grading. The work may be text typed online or uploaded files of any type the trainers' device can read. Grading may be by simple percentages or custom scales, or more complex rubrics may be used. Trainees may submit as individuals or in groups.

- **Forum**

The Forum activity allows trainees and trainers to exchange ideas by posting comments as part of a 'thread'. Files such as images and media may be included in forum posts. The trainer can choose to grade and/or rate forum posts and it is also possible to give trainees permission to rate each other's posts.

In the scope of the SEATB training course, the implementation of an online forum is advised to allow trainees to engage and connect to their peers and trainers and receive feedback.

Forum should be organized by thematic topics. A good idea is to create folders by topics, so that the information will be organized. Otherwise, the forum may become confused, with many scattered messages, losing its usefulness as a communication facilitator. So, the suggestion is to define 1 topic for each competence unit and other topics to deal with other matters that are not directly related to any competence unit's matters.

The person responsible for the forum must perform a daily monitoring to keep the community alive and useful and share clear participation rules. And, if activities are defined for trainees to do, it is very important to give clear instructions and setting deadlines for its completion. **A preview of SEABT forum in Moodle is given in the [Operational Steps for the integration in MOODLE](#) section of this guide.**

3.2. TEAMS

Microsoft Teams can be used by educators to set up virtual classrooms, keep assignments organized, and collaborate in real time with a group of trainees, making use of additional Microsoft tools such as Word, Excel, and PowerPoint files. The main TEAMS functionalities that can be used in the learning context are:

- **Class teams –** opening a Class notebook as a space where all can take notes, collaborate and view materials /contents;
- **Conversations and collaboration –** starting individual or group conversation using teams channel, with multiple chats offer options;
- **Assignments and grading** – defining group assignments for trainees to collaborate as a group and integrate forms for quizzes and live pools; each class has a grade feature where it is possible to view assignments at a glance, as well as track how individual trainees in your class are progressing;
- **Education insights** – enabling to provide real-time analytics and visualizations of student progress;
- **Social-emotional features -** sticker pack can be used for creating emotion-driven feedback;
- **Class sessions –** staring live class sessions, offering the ability to share content, set up;
- Breakout rooms, see participants raising their hands, and more options.

Further guidance on how to implement SEABT in TEAMS is provided in section of this guide.

3.3. Modular Systems Platform

The Modular Systems Platform (https://www.ewf.be/msplatform) managed by EWF, was designed to facilitate the process of education, in regard to the area of manufacturing and aims to benefit users across many educational hierarchical levels. It works like an online training catalogue granting students applicants access to the details of the available curriculum and aids them in choosing which qualifications would interest them most. Also, it makes it easier for current students to organize their curricular obligations and accomplishments as well as keep track of their progress.

On an administrative level, the Modular System Platform facilitates the management of students, for both EWF Authorized Nominated Bodies (ANBs) and Authorized Training Bodies (ATBs), simplifying processes, such as: the approval of qualifications and curricular units for a given student, also allowing for an organized look at students' files.

In terms of structure, the Platform offers an assortment of features, according to the permissions of each type of users (e.g. students, ANBs, ATBs and open to the public), as listed below:

- **For the General Public:**
  - Assessment questionnaire to direct prospective students towards the qualifications that match their preference;
  - Organized and searchable lists containing information on Competence Units, Qualifications, ATBs and ANBs;
  - List of publicly available courses.
- **For Authorized Nominated Bodies (ANBs):**
  - Editable lists containing information regarding the ATBs and students under their scope;
  - Ability to assign an ATB to a student;
  - Ability to approve the completion of a Qualifications or Competence Unit.
- **For Authorized Training Bodies (ATBs):**
  - Editable lists containing information regarding the students under their scope;
  - Ability to confirm the completion of a Qualification or Competence Unit by a student, to be later approved by an ANB;
  - Ability to create courses, which can be made public;
  - Ability to create custom degrees, for testing purposes only.
- **For Students:**
  - Access to the list of Qualifications and Competence Units they have completed;
  - Access to the completion rate of Qualifications they are currently trying to obtain;
  - Access to automatically calculated suggestions on potential Qualifications and Competence Units, based on their current curriculum.

Functionalities (ANBs)
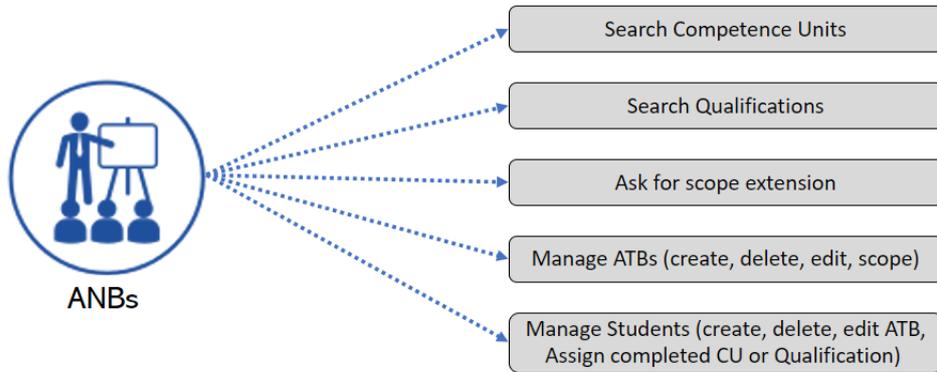
Figure 1 - Modular System - ANB functionalities

Functionalities (ATBs)
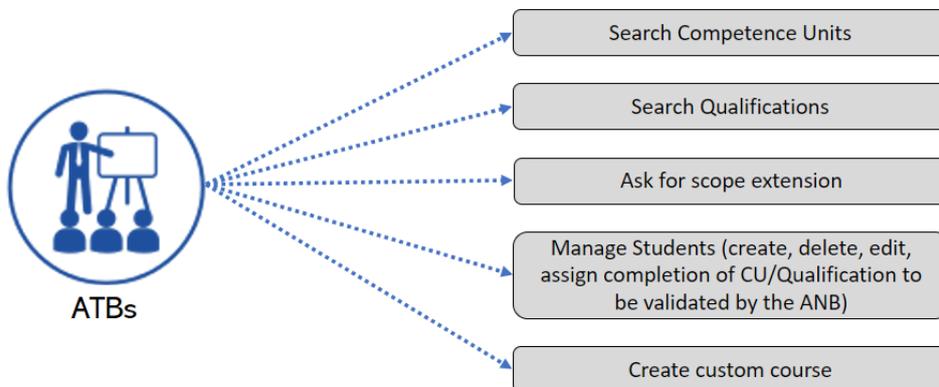
Figure 2 - Modular System - ATB functionalities

Functionalities (Students)
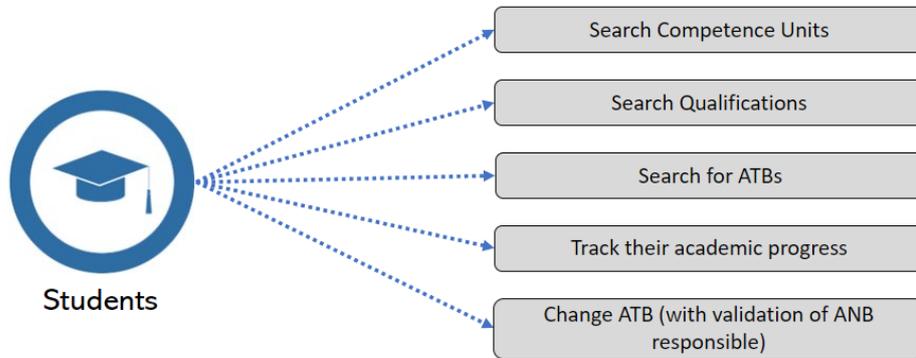
Figure 3 - Modular System - Students functionalities

Functionalities (External Users)
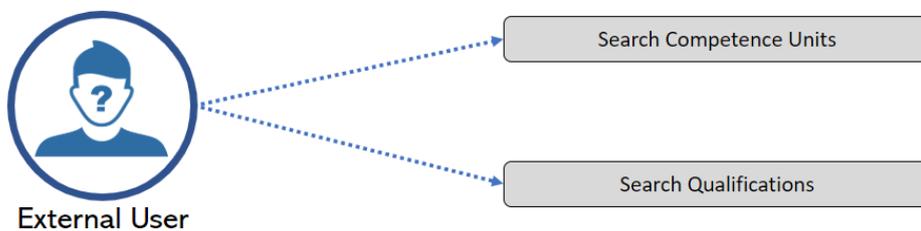
Figure 4 - Modular System - External Users functionalities

The steps by step approach on how to insert Competence Units into the Modular System is given in Operational Steps for the integration in EWF Modular Systems section of this guide.

Currently the Modular System is only available for the International Additive Manufacturing Qualification System (https://www.ewf.be/sam/am-education-and-training/am-qualification-system/quali-fications-and-competence-units/qualifications.aspx), being an online catalogue of the existing training offers (Qualifications and Competences Units) for additive manufacturing technologies. Further developments will be made in the next years to extend this platform to training for welding and adhesive technologies.

4. Operational steps for the integration of the innovative tools and SEABT Competence Units

4.1. SEABT – a workplace related approach for setting up training courses

The new training courses (Specific European Adhesive Bonding Training – SEABT) have been designed in accordance with the current comprehensive EAB qualification, to ensure that the new skills are more easily available to those who have acquired them as and when required, thus introducing a cumulative system for EAB curricula, whereby already proven knowledge can be credited.

Operators in adhesive bonding in the industry are responsible to conduct all necessary work steps technically correct in the right sequence to produce high quality adhesively bonded joints. This includes the preparation of the workplace, the substrates and adhesives. Moreover, the person will apply surface treatment methods in respect of the used substrate material, he or she will apply the adhesive, perform the joining, fixing and curing of the joint.

4.1.1 General structure of the SEABT qualification

In general, the SEABT curriculum describes the knowledge, skills, autonomy and targeted responsibility of the person after passing the training (table 1).

Knowledge	Skills	Autonomy & Responsibility
Factual knowledge (basic understanding) of adhesive bonding technology principles and concepts.	Be able to carry out adhesive bonding technology work for a limited and specific scope of adhesive bonding activities/processes	Work under supervision and work instructions in a competent manner, giving feedback in case of irregularities.

Table 1: Targeted knowledge, skills and responsibilities of a SEABT participant.

To address the different topics of the necessary workplace related knowledge the curriculum is divided into different competence units. All competence units are organized in knowledge and skills corresponding for the independent proficiency level within EWF´s Systems Framework levels, in alignment with the European Qualification Framework (EQF level 4). The course/curriculum is organized according to 4 Competence Units (CU) / Units of Learning Outcomes (ULOs), as shown in table 2.

The candidate completing the training under this programme shall possess a factual knowledge and understanding of some universally valid basic principles of adhesive bonding technology, as well as required skills and autonomy level to perform specific adhesive bonding field of activities / processes.

4.1.2 Structure of the Specific European Adhesive Bonding Training - SEABT qualification

4.1.2.1 Subject content design of a training program

The SEABT qualification consists of a compulsory competence unit (CU1), which is a mandatory part of every SEABT qualification which provides a basic understanding of adhesive bonding principles and topics.

The competence units CU2 and CU3 are subdivided in specific subjects which are selectable according to need and client requirement or specific target applications.

Competence units 2 contain knowledge about specific surface treatment methods, competence unit 3 about different adhesives and sealants.

Competence units 2 and 3 contain different subjects of which not every subject is relevant for every industrial sector. If for example a specific surface treatment and adhesive is used for an industrial application the participants of the SEABT course need to acquire the knowledge of the specific surface treatment and adhesive used in his or her workshop in the company. In contrast to the established EAB profile which was designed not for a specific industrial sector or application, the SEABT focuses on only the currently used technologies in the user company and the training content can be selected for the respective target group.

The acquired knowledge of the SEABT curriculum can be credited for the EAB training course. If all subjects of competence units 1-3 are completed by the candidate a transfer to receive the EAB diploma is possible.

In case a company/industrial application requires knowledge, which is not part of the EAB curriculum an optional competence unit 4 was created. In agreement with the candidate/company specific application related topics (e.g. other surface treatments or adhesives than in the EAB curriculum, specific mixing technologies or ways to apply the adhesive) can be part of the SEABT.

The training competence units of the SEABT are given in the Table 2. The training consists of compulsory competence unit 1 and selectable subjects of competence units 2 and 3.

Competence unit	Name	Subjects
CU1 all subtopics compulsory	Introduction to Adhesive Bonding	• Fundamentals of adhesion and adhesives • Surface treatment (basics) • The main families of adhesives and sealants (basics) • Design and construction of adhesive joints • Quality assurance /Quality management • Durability of adhesively bonded joints • Benefits and limitation of adhesive bonding technology • Health and safety

CU2 Number and kind of subtopics can be selected according the costumer needs	Specific surface treatment methods	• Specific cleaning methods • Mechanical treatment • Physical treatment • Chemical treatment • Primer
CU3 Number and kind of subtopics can be selected according the costumer needs	Specific adhesives and sealants	• 1K Epoxies • 2K Epoxies • 1K Polyurethanes • 2K Polyurethanes • 1K Silicones • 1K Silane Modified Polymer adhesives (SMP) • Cyanoacrylates • Anaerobically curing adhesives • MMA/2K Acrylics • Radiation curing adhesives • Hotmelts • Solvent based adhesives • Water based adhesives • Pressure sensitive adhesives (PSA)
Optional CU4	Specific adhesive bonding topics	Topics to be defined in agreement with the costumer

Table 2 Competence units and subjects of the SEABT

The total duration of each training program (compulsory and selectable competence units / see Table 2) must be at least 24 hours.

4.1.3 Access conditions and examination

4.1.3.1 Access conditions to SEABT course

The SEABT participant must be proficient in the respective language in which the training program is carried out to the extent that he/she can follow the lessons competently, carry out the practical exercises according to oral and written work instructions and take the examination. Furthermore a minimum age of 16 is required and basic skills in material processing are recommended.

4.1.3.2 Examination procedure

4.1.3.3 Duration and structure of the examination

The total examination time is 4.5 hours and is divided into 4 hours of practical examination and 0.5 hours of theoretical written examination. The assessment for each CU can be performed separately.

4.1.3.4 SEABT confirmation after passing the examination

After passing the examination, a record of achievement is awarded. This record of achievement contains the name, surname, place and birthdate of the participant, place and name of the executing training organisation of the SEABT, as well as a detailed list of the competence units that were part of the SEABT in which the person participated.

4.1.4 Possible areas of application of a Specific European Adhesive Bonding Training - SEABT qualification according to industrial sectors and adhesive bonding technology applications

The following list contain, by way of example and by no means in its entirety, a number of industrial manufacturing sectors in which adhesive bonding technology is used and SEABT can potentially be used:

- Civil engineering / Building construction
- Shipbuilding industry
- Bus construction
- Special vehicle construction
- Automotive
- Wind energy industry

4.1.5 Instructions on how to set up a customer- and workplace-oriented Training programme

Each Training program requires special preparation, as these qualifications are company/industry specific and/or - regardless of company and industry - only relate to very specific, selected adhesive application areas. In order to achieve the best possible customer orientation and the best possible adhesive bonding technology competence building success with the customer through a SEABT, the following questions must be carefully and honestly clarified in advance by the executing ATB with the potential client:

- What are the typical adhesive bonding applications?
- What does typical adhesive bonding work look like in the company?
- Which adhesively bonded substrate materials are used?
- Which adhesives are used?
- Which surface treatments are used?

For itself, the training organisation must answer the following questions:

- • Is a SEABT offer the best solution in the specific case of the request or is a comprehensive EWF qualification (EAB, EAS, EAE) the better offer?
- • Can the potential client's personnel qualification expectations be seriously met within the framework of a SEABT?
- • Is the respective training organisation capable of seriously fulfilling the potential client's personnel qualification requirements within the framework of the SEABT?

4.1.6 Linking the SEABT qualification with the EWF EAB qualification and SEABT follow-up qualifications

For this purpose, the participant of a SEABT qualification must verify that he/she has acquired and verified all subject contents of an EWF EAB qualification (40 h) within two years and within the framework of SEABT further training measures in theory and practical exercises, both conducted by a recognised ATB. The official verification is the prerequisite for admission to an official EWF EAB examination (written, practical, oral), after the successful passing of which he/she will receive the EWF EAB diploma.

To achieve the EAB Diploma, due to the fact that the EWF EAB qualification, unlike the SEABT qualification, is holistic, i.e. without restrictions on specific adhesive bonding activities, company/industry specifics and joining part materials, participation in the EWF EAB examination is required

4.2. SEABT digital and innovative learning and assessment tools

PR2 "Tools for flexible learning "encompass the range digital training materials, that were developed to support the implementation of a more flexible learning and give trainees a more agile and learner-centred way of achieving the learning outcomes for the SEABT qualification**. PR2 toolkit** includes the development of exercises using a problem-based learning approach and case studies.

The digital resources can be **integrated with a Learning Management System (LMS)** using SCORM files that are available in KNOWBOND website, and detailed in table 3 below:

KNOWBOND Digital Training Materials (for General Training & Specific Window and Plastic Bonding topics)	
CU	**Subjects**

CU 1	• **Introduction to Adhesive Bonding:**
	    o Fundamentals of adhesion and adhesives (EN - PT - ES - DE - SLO)
	    o Surface treatment – basics (EN - PT - ES - DE - SLO)
	    o The main families of adhesives and sealants - basics
	      (EN - PT - ES - DE - SLO)
	    o Construction and design (EN - PT - ES - DE - SLO)
	    o Quality assurance / Quality management (EN - PT - ES - DE - SLO)
	    o Durability of adhesively bonded joints (EN - PT - ES - DE - SLO)
	    o Benefits and limitation of adhesives (EN - PT - ES - DE - SLO)
	    o Health and safety (EN - PT - ES - DE - SLO)

CU 2	• **Specific Surface Treatment Methods:**
	o Specific cleaning methods (EN - PT - ES - DE - SLO)
	o Mechanical treatment (EN - PT - ES - DE - SLO)
	o Physical treatment (EN - PT - ES - DE - SLO)
	o Chemical treatment (EN - PT - ES - DE - SLO)
	o Primer (EN - PT - ES - DE - SLO)
CU 3	• **Specific Adhesives and Sealants:**
	o 2K Epoxids (EN - PT - ES - DE - SLO)
	o 1K Polyurethanes (EN - PT - ES - DE - SLO)
	o 2K Polyurethanes (EN - PT - ES - DE - SLO)
	o 1K SMPs (EN - PT - ES - DE - SLO)
	o Radiation curing adhesives (EN - PT - ES - DE - SLO)
	o Pressure sensitive adhesives (EN - PT - ES - DE - SLO)
GAME	• **Project Game:**
	o Bonder Game - EN
	o Bonder Game - PT
	o Bonder Game - ES
	o Bonder Game - DE
	o Bonder Game - SLO
	Also, a **demonstration use** is available for the Bonder Game enabling the online automatic display in the project website: https://knowbondproject.eu/project-results-pr2.html

Table 3- Digital Training Materials

Also, a demonstration use is available for the Bonder Game enabling the online automatic display in the project website.

Bonder Game – Demo version
 • Bonder Game **EN** (Download - Preview) • Bonder Game **PT** (Download - Preview) • Bonder Game **ES** (Download - Preview) • Bonder Game **DE** (Download - Preview) • Bonder Game **SLO** (Download - Preview)

4.3 SEABT resources implementation

This section includes a matrix of available problem-based exercises and case studies designed for each competence unit (CU), given indication about their context of use.

Competence unit	Innovative resource		Context of use	
	Case study	Exercise ID	Face to face	Online (self-study)
All	Case study 1		x	
All	Case study 2		x	
All	Case study 3		x	
All	Case study 4		x	
All	Case study 5		x	
All		Bonder Quiz	x	x
All		2. Identification and sequencing of the main steps in the production process of adhesive joints	x	x Bonder quiz – first challenge
• Introduction to adhesive bonding • Surface treatment		3. Evaluation of surface treatment	x	
• Introduction to adhesive bonding • The main families of adhesives and sealants - basics		4. Evaluation of the main families and sealants	x	x
• Construction and design • Final inspection		5. Analysis of defects in adhesive joints	x	x
• Introduction to adhesive bonding • The main families of adhesives and sealants - basics		6. Bond test aim	x	x
• Introduction to adhesive bonding • Benefits and limitations of adhesives		7. Evaluation of benefits and limitations of adhesive bonding	x	
• Introduction to adhesive bonding • Health and safety		8. Working instructions	x	
• Introduction to adhesive bonding • Surface treatment • Quality control		9. Preparation of workplace/Manufacturing of work samples	x	
• Introduction to adhesive bonding		10. Bus and Train windshield bonding	x	

• Durability of adhesively bonded joints				
• Introduction to adhesive bonding • Durability of adhesively bonded joints		11. Car side-mirror bonding	x	
• Introduction to adhesive bonding • Quality assurance / Quality management	Final inspection Defect analysis	Final inspection	x In practical training using bonded samples	x Bonder quiz - Final Inspection step Exercise in training materials

Table 4 – Matrix of SEABT Resources

As detailed in the matrix (Table 4), PR2 results cover five case studies (Fig5.) and ten problem-based exercises (Fig6.) which can guide trainers and teachers in delivering the SEABT CUs.

Figure 5 - Example of Case Study for SEABT

Figure 6 - Example of Exercise for SEABT

(Source: KNOWBOND, PR2)

4.4 Operational Steps for the integration in MOODLE

To create SEABT course in the e-Learning platform, such as MOODLE the steps are:

1st - the first step is to **download the SCORM file** for the **selected language** (English-Portuguese-Spanish-German- Slovenian) in which the course will be taught.

Digital resoures for each competence unit

Introduction to Adhesive Bonding:

- Fundamentals of adhesion and adhesives (EN - PT - ES - DE - SLO)
- Surface treatment – basics (EN - PT - ES - DE - SLO)
- The main families of adhesives and sealants - basics (EN - PT - ES - DE - SLO)
- Construction and design (EN - PT - ES - DE - SLO)
- Quality assurance / Quality management (EN - PT - ES - DE - SLO)
- Durability of adhesively bonded joints (EN - PT - ES - DE - SLO)
- Benefits and limitation of adhesives (EN - PT - ES - DE - SLO)
- Health and safety (EN - PT - ES - DE - SLO)

Specific Surface Treatment Methods:

- Specific cleaning methods (EN - PT - ES - DE - SLO)
- Mechanical treatment (EN - PT - ES - DE - SLO)
- Physical treatment (EN - PT - ES - DE - SLO)
- Chemical treatment (EN - PT - ES - DE - SLO)
- Primer (EN - PT - ES - DE - SLO)

2nd - the second steps, is to **upload the selected SCORM files in MOODLE**, following the sequence and organisation of the SEABT course structure (precedence foreseen in the curricula).

3rd - after the uploading one by one, all subjects will be available and grouped in the corresponded CUs.
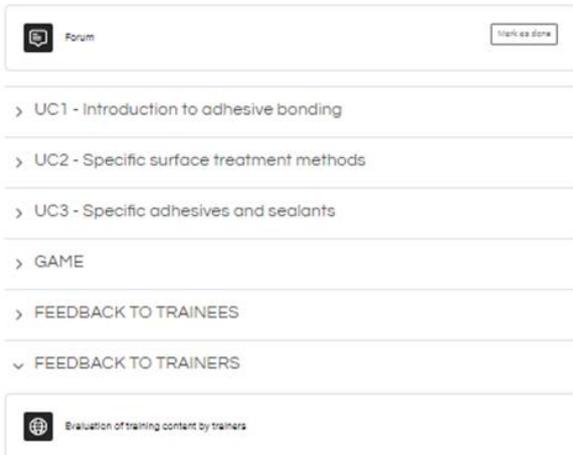
Figure 7 - Overview on the SEABT course structure
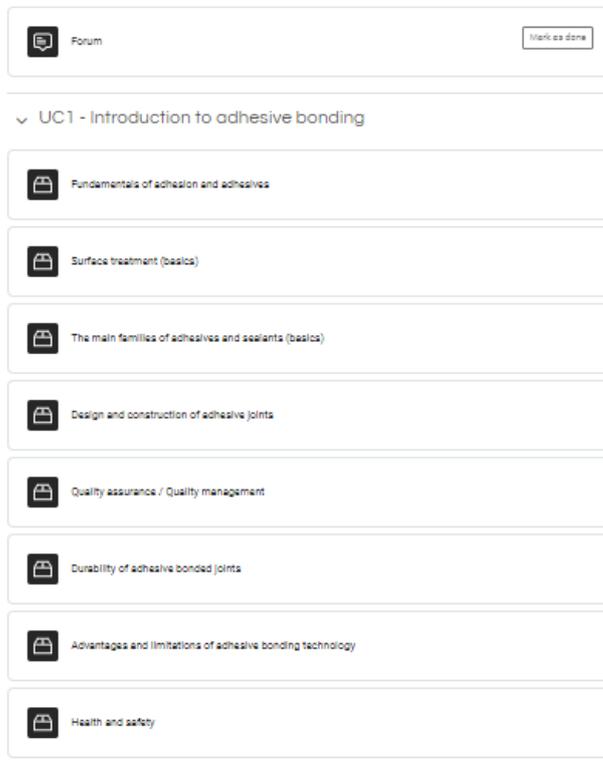
Figure 8 - Details of CU 1"Introdcution to adhesive bonding" subjects

4ᵗʰ - exploring the course contents - **To explore the SEABT Course contents in MOODLE**, trainees can access the CUs and game sections, among other experience organized by the trainer and displayed in the LMS.

Figure 9- Overview of SEABT General Moodle Course Menu

5ᵗʰ- in each CU, and per subject, students just need to **follow the order and sequence given in the menu.**
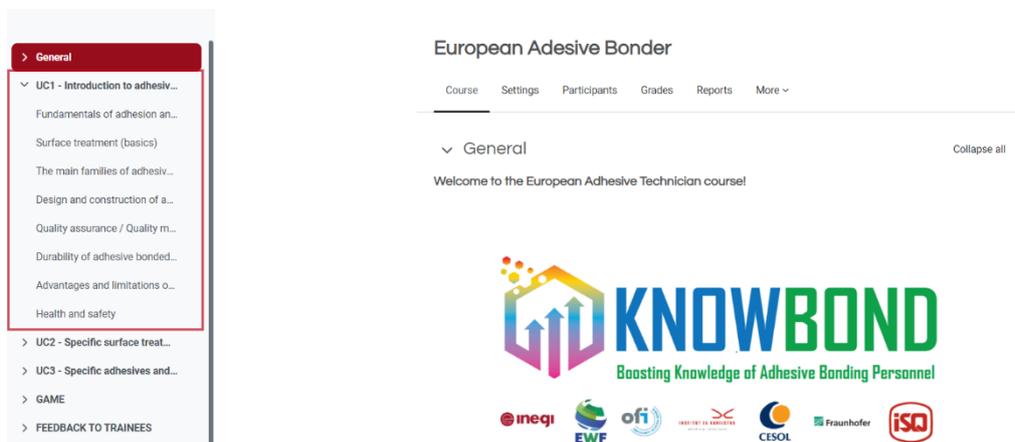
Figure 10 - Detail of CU1 content in SEABT Moodle

Figure 11 - Detail of lesson start for CU 1

6th - the **Bonder quiz is the last activity** to be formed. It is the final game, addressing all subjects.

Figure 12 - Overview of the Bonder Game

7th - further suggestions **to enhance the SEABT MOODLE experience**, is to benefit from more functionalities that can be added to the course, such as, **the Chat/forum, feedback forms**.

8th - The implementation of **an online forum allows trainees to engage and connect to their peers and trainers and receive feedback**. The model for organizing and monitoring the e-Forum is:

- The forum can be organized with five main topics: one per competence unit and one general topic;
- Ground rules: Set the ground rules beforehand (e.g., stay on topic, be polite and respectful, etc);
- In the general topic, present yourself and ask trainees to share who they are. In general, make the initiative of posting a question, though, or idea, so trainees can start engaging in the forum;
- Monitor the conversation to ensure that it stays on-topic but give your trainees the opportunity to share their skills and insights with each other. keep the discussions alive. When you feel as though the current idea has been thoroughly examined, post a new idea to get the online discussion flowing again;
- If trainees are working in groups, create forum streams visible to the members of the group, so all trainees have the possibility to engage in the discussion:
- Post engaging external links relevant to the topics (e.g.: YouTube videos);
- Ask for trainees' feedback regarding where they are, in their learning journey
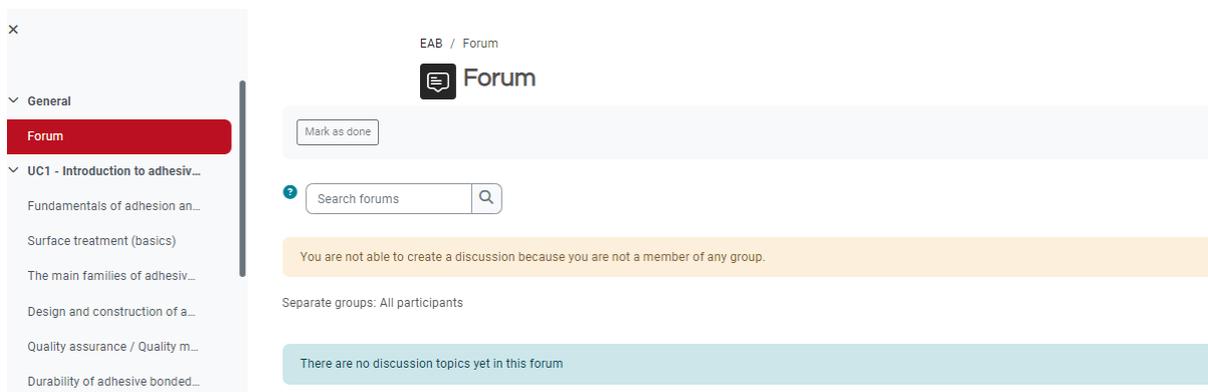
Figure 13 - Overview of Forum option in MOODLE

4.5 Operational Steps for the use in TEAMS

The SEABT course can benefit from real time collaboration and communications tools, such as MS Teams, to enable a most effective learning experience in the online context. Those platforms are quiet user-friendly, open and accessible to everyone, and can be a meaningful resource for education and training.

Guidance on to get most out of MS TEAM, such as to Use chats for one-to-one messages and general channels for collaboration; making groups private to let the team focus on their work, Set up teams for each project, or set up class /group with Folders and Files, and more can be found in Microsoft TEAMS tutorials.

Fig.14 shows step by step how to implement TEAMS most common feature related on the class sessions.

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Figure 14- TEAMS common features

ADDITONAL TEAM SOURCES:

MS TEAMS for your classroom PPT https://www.microsoft.com/cms/api/am/binary/RWKBOr

Microsoft Teams best practices for educators, students, and IT admins https://support.microsoft.com/en-us/topic/microsoft-teams-5aa4431a-8a3c-4aa5-87a6-b6401abea114?ui=en-us&rs=en-us&ad=us&location=supportresources

Within this section, we approach some examples on how KNOWBOND digital resources (PR2) can be used with TEAMS as learning experience.

TEAMS Lesson plan (24 hours course)	Description	Suggestion for Interaction
Session 1 – Course kick-off	• Participants introduction • SEABT course introduction – Programme /curricula • MOODLE (content & functionalities intro)	• Live pools
Session 2 – CU 1 (part1) **Session 3 – CU 1 (part 2)**	• MOODLE or PPTs	• Screen sharing • Videos • Live pools
Session 4 - CU 1 (part 3)	• Exercise 5 Analysis of defects in adhesive joints • Exercise 6 Bond test aim • Exercise 8. Working instructions • **	• Break out rooms - group work • Live pools
Session 5 - CU 2 (part1)	• • MOODLE or PPTs	• Screen sharing • Videos
Session 6 - CU 2 (part2)	• Exercise 3. Evaluation of surface treatment • Exercise 9. Preparation of workplace/Manufacturing of work samples • Exercise 10 - Bus and Train windshield bonding • Or Exercise 11. Car side-mirror bonding • **	• Break out rooms - group work • Live pools
Session 7 – CU 3 (part 1)	• MOODLE or PPTs	• Screen sharing • Videos • Live pools
Session 8 – CU 3 (part 2)	• Exercise 4.- Evaluation of the main families and sealants • Or Exercise 10 - Bus and Train windshield bonding Or Exercise 11. Car side-mirror bonding • Final Inspection • **	• Break out rooms - group work • Live pools
Session 9 - Wrap up /evaluation	• Exercise 2. Identification and sequencing of the main steps in the production process of adhesive joints • Bonder Quiz / quiz review • Evaluation	• Break out rooms - group work
Session 10 – Closure	• Collect feedback • Next steps of training	

Table 5- SEABT Lesson Plan for TEAMS

** The sequence and approach of the exercise will depend on the training approach and the group composition

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4.6   Operational Steps for the integration in EWF Modular Systems

EWF Modular System is online training catalogue granting access to the details of training curriculum in EWF Qualifications Systems. Currently this tool is underdevelopment and limited to Additive Manufacturing Technologies Qualifications. However, the intention of this section, is to facilitate the integration SEABT training modules (CUs) in the future, once the functionalities is open to more qualifications, including Adhesive Bonding Qualifications.

This section gives a detailed description on how to insert a new Qualification and Competence Units within the Modular System.

1st – How to login?

The first step will be to login. The credentials to do this are send by email.

After receiving the credentials, the user (with permission to create Qualifications and CUs) you can log in by pressing the button marked in the image below.

Figure 15 - Login

When pressing the button, a window, like the one below (Fig16), will open, showing you two text-boxes. In the upper textbox you will need to type in your username, and in the lower one you will need to type in your password.
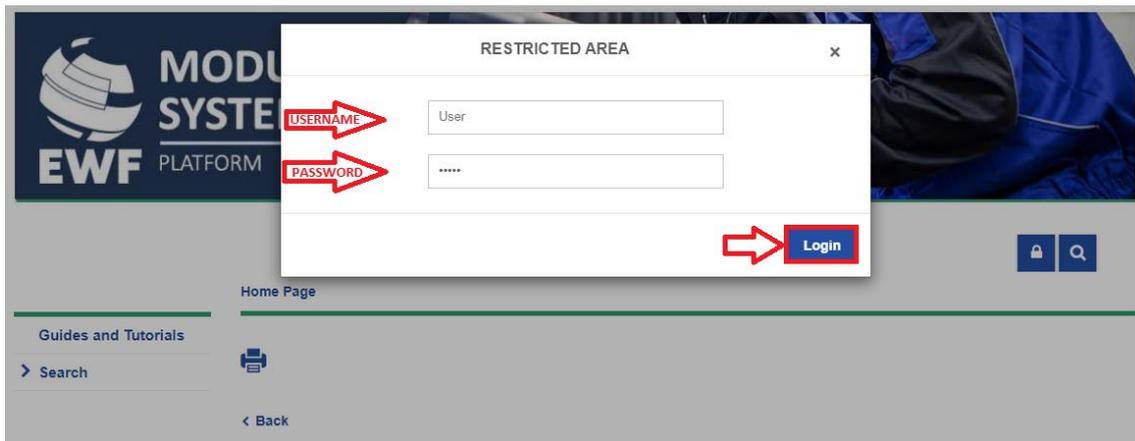
Figure 16 - Login window detail

Once the fields are completed, press the "**Login**" button to conclude the login process. If the fields are both correct, the top of the screen should look something like the image below (Fig17).
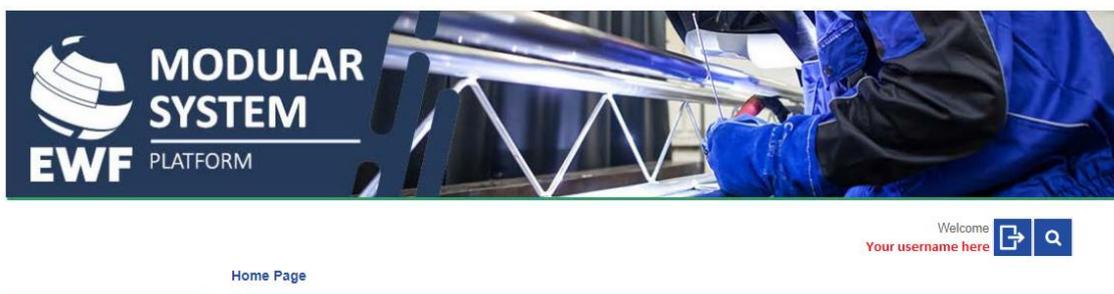
Figure 17 - Home page after a successful login

2ⁿᵈ How to create /add a New Qualification

A new Qualification can be created in the "**Platform Management**" section.

The first step is to click on the "Platform Management" option.

Figure 18 - Home page, with highlighted Platform Management section

Then, click on the "Qualifications" option.
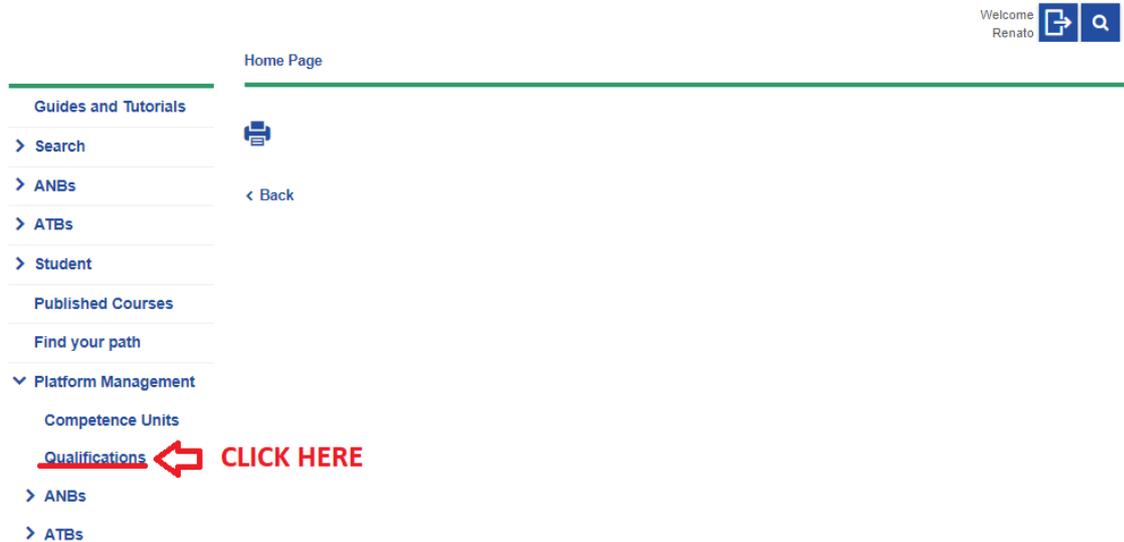
Figure 19 - Home page, with highlighted Qualifications section

When selecting this option, a list containing the Qualifications that have already been created will appear. To create a new one, click on the "New" bottom.
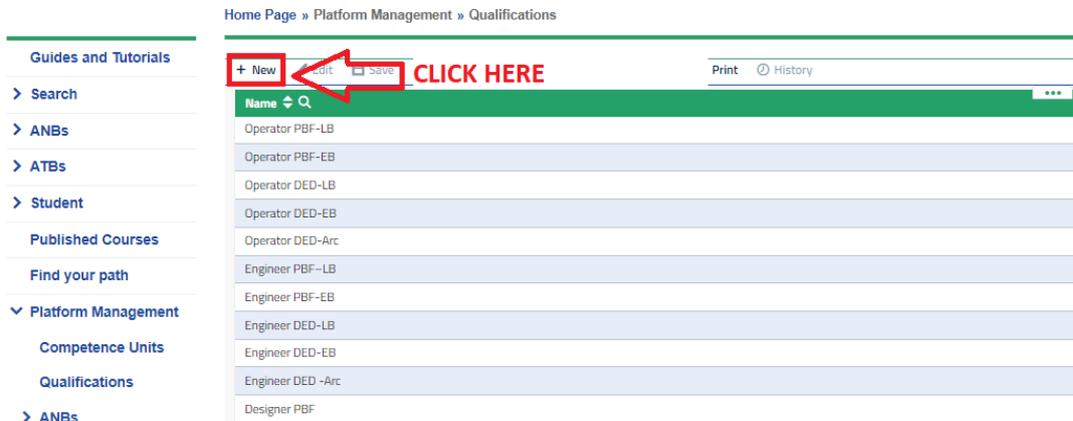
Figure 20 - Qualifications section, with highlighted New button

This will lead to a form that must be fill out with the information required to define the Qualification (see detailed on Qualification content in Table 6:

Required information to create e New Qualification
Name (ID of the Qualification)
EQF Level (From 2 to 6)
EWF Level (Basic to Advanced)
Area (Additive Manufacturing) [Future: Adhesive Boding / Welding /Etc]
Theme
Add CUs (As much as define by the Qualification) [Future: Adhesive Bonding – 4 CUs]
Knowledge
Skills

Table 6 – Information required to set a Qualification

Once form is completed, click on the "Save" bottom to complete the creation of the new Qualification.

Figure 21 - Qualifications section, with highlighted Save button

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3rd - How to create /add a new Competence Unit ?

A new Competence Unit can be created in the "**Platform Management**" section.

The first step is to click on the "Platform Management" option.
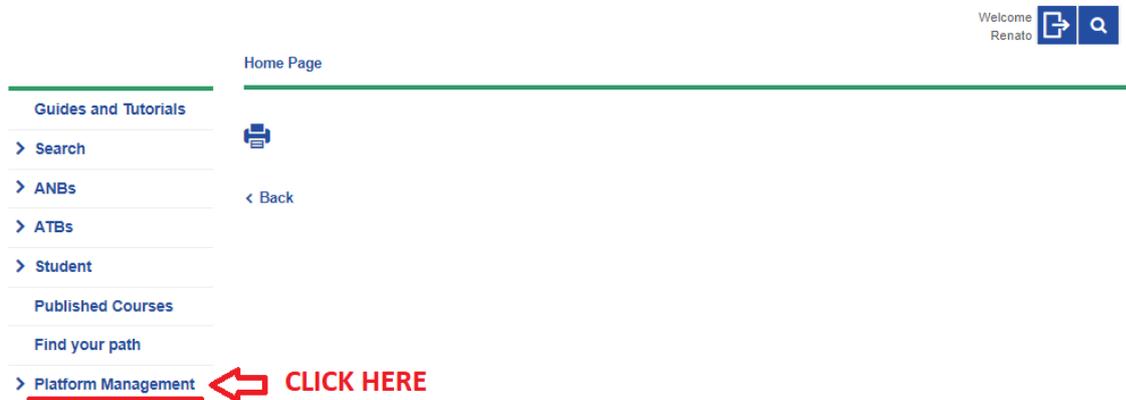
Figure 22 - Home page, with highlighted Platform Management section

Then click on the "Competence Units" option.
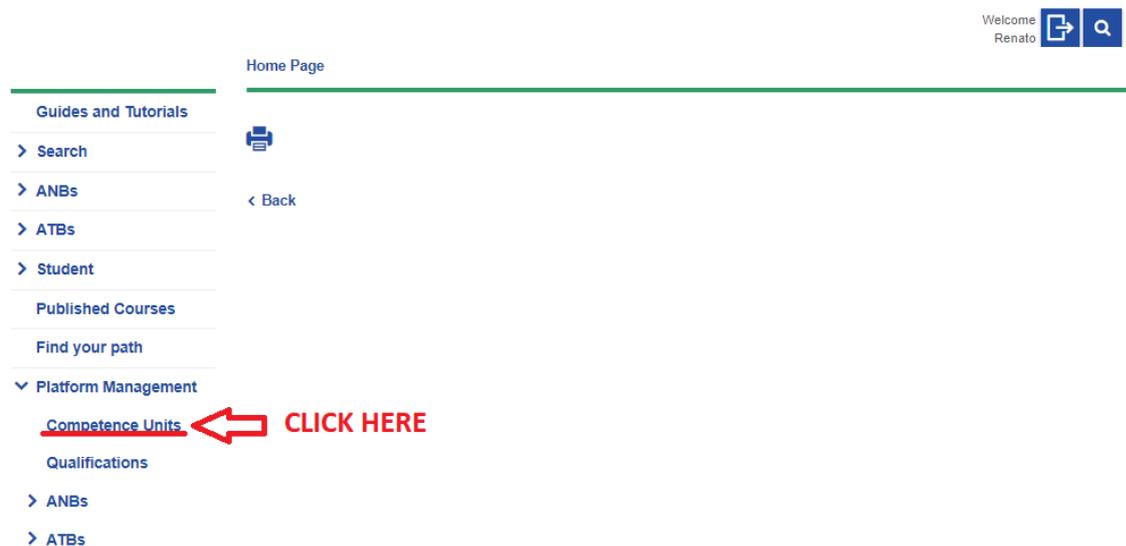
Figure 23 - Home page, with highlighted Competence Units section

After selecting this option, a list containing the Competence Units that have already been created will appear. To create a new one, click on the "New" bottom.

Figure 24 - Competence Units section, with highlighted New button

This will lead to a form that must be fill out with the information required to define the Competence Unit, as detailed in table 7:

Required information to create e New Competence Unit
Name (ID of the Competence Unit)
EQF Level (From 2 to 6)
EWF Level (Basic to Advanced)
Link /or not to a Qualification [If Link to Qualification, the Qualification has to selected]
Workload: Contact Hours + self-study + on job training
Scope = Knowledge
Skills

Table 7 - Information required to set Competence Unit

Once the form is filled out, click on the "Save" bottom to complete the creation of a new Competence Unit.

Figure 25 - Competence Units section, with highlighted Save button

5.   Final Considerations

This guide reflects the effort in describing the operational steps to be followed for the integration of KNOWBOND results into the most used learning and management platforms by education and training organisations.

Although the starting point of the guide development was focused in identifying the learning contexts and tools employed by the project partners, the digital learning tools developed for the SEABT course have the potential to be integrated in further learning platforms, to address the suitable tools used by the different education providers.

The scope of the guide was broadened to describe how the SEABT course, and its resources can be extended to face to face as well as the online contexts of implementation.