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CONSTRUCTHER **FUTURE**

SET OF INNOVATIVE DIGITAL TEACHING TOOLS AND METHODOLOGIES

PROJECT NUMBER: 2024-1-IE01-KA220-VET-000257661

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WP3 - ConstructHer VET Educator Training and Development

Activity no. 3: Set of innovative digital teaching tools and methodologies

within the project „ConstructHer Future”

Language version: English



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Table of contents

Introduction

Section 1:
Digital Simulations

Section 2:
Project-based learning platforms

Section 3:
Online collaborative tools

Section 4:
Gamification strategies



Introduction



This document has been developed within the framework of the ConstructHER project as part of the VET Educator Educator Training Program initiative. Its purpose is to provide a curated set of innovative digital teaching methodologies aimed at modernizing vocational education in construction, making learning experiences more interactive, accessible, and aligned with real-world industry practices.



The compilation is structured around four thematic areas: Digital Simulation Tools and VR Environments, Project-Based Learning Platforms, Online Collaborative Tools, and Gamification Strategies. Each section highlights practical methodologies, illustrating how digital tools can enhance hands-on learning, facilitate real-world problem-solving, promote collaboration, and increase engagement and knowledge retention. The approaches presented here have been developed and refined by ConstructHER project partners from six countries, ensuring a broad perspective and relevance across diverse educational contexts.

By connecting innovative digital strategies with practical teaching applications, this resource aims to support VET educators in creating more inclusive, interactive, and empowering learning experiences.

Section 1:

Digital Simulations

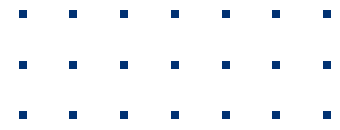
Digital simulation tools and virtual reality (VR) environments are transforming how learners engage with construction-related training. By providing safe, controlled, and highly interactive settings, these technologies allow students to gain hands-on experience with complex processes, equipment, and scenarios without the risks or limitations of real-world practice. Such approaches not only enhance technical skills but also help learners build confidence, problem-solving abilities, and industry-relevant competencies.

Within the ConstructHER project, this section explores innovative simulation and VR methodologies identified by partners across six countries. The focus is on accessible, inclusive solutions that educators can integrate into vocational education and training (VET) programs to modernize teaching practices and support broader participation in construction fields.



By showcasing practical tools and approaches, this chapter aims to demonstrate how digital simulations and VR can bridge the gap between theory and practice, preparing learners for the realities of the construction industry while ensuring that training environments remain engaging, equitable, and future-oriented.

VIRTEC Virtual House Simulator



<https://sites.google.com/tktk.ee/virtecstudy/simulators>

Description of the method/tool



VIRTEC is a free, open-access virtual house simulator that allows learners to interact with structural layers of residential buildings. It was developed using AutoCAD and Python and does not require any additional hardware or downloads.

Advantages



- Free, accessible without downloads;
- Excellent for entry-level learners and inclusive environments

Disadvantages



- Limited interactivity beyond viewing;
- lacks real-time manipulation or instructor control.



VIRTEC



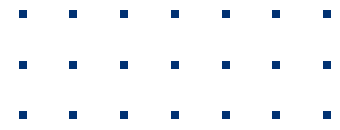
<https://sites.google.com/tktk.ee/virtecstudy/simulators>

VIRTEC is ideal for teaching fundamental construction knowledge, such as wall systems, insulation layers, and roof components. It's highly inclusive—accessible via mobile phone—and provides a private learning space for women and beginners who may lack prior hands-on experience. Especially valuable in resource-limited settings.



CoSpaces Edu (Delightex Edu)

<https://cospaces.io/edu/>



Description of the method/tool



CoSpaces Edu is a browser-based platform allowing students to create and explore 3D virtual environments. It supports visual scripting, basic physics, and VR interaction via headsets like Google Cardboard or Oculus. Learners can construct scenes representing construction sites, safety scenarios, or architectural models using drag-and-drop tools.

Advantages



- Highly engaging;
- Supports storytelling and spatial reasoning;
- Web-based;
- Compatible with mobile VR headsets.

Disadvantages

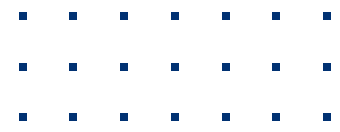


- Limited realism for advanced engineering concepts;
- Requires internet connection and basic hardware.

It's especially effective for entry-level construction VET learners to explore spatial awareness, safety procedures, or site logistics. It supports inclusive participation by minimizing physical barriers and offering intuitive, creative engagement. Students can role-play site inspections, simulate phased development, or build digital models collaboratively.

EdApp by SafetyCulture

<https://www.edapp.com>



Description of the method/tool



EdApp is a free microlearning platform that offers interactive modules and simulations for vocational training, particularly in safety-critical industries like construction. It includes a wide library of ready-made courses, including scaffold safety, PPE usage, site hazard identification, and working at heights. Learners engage with simulation-like decision-making tasks that mimic real-world construction site scenarios, helping to build situational awareness and practical knowledge in a risk-free environment

Advantages

- Practical, risk-free training
- Flexibility and customization

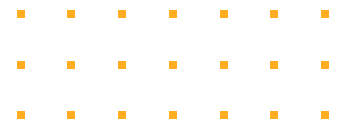
Disadvantages

- Limited depth compared to on-site practice
- Dependence on technology

This tool can be used in VET construction programs to simulate on-site situations where safety practices and procedures are critical. It is especially suitable for students with limited access to real construction environments. Instructors can assign modules as pre-task training, assessment exercises, or in blended learning models to reinforce theoretical knowledge with scenario-based practice.

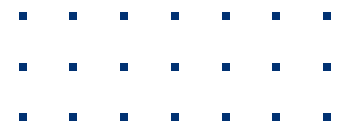
EdApp by SafetyCulture

<https://www.edapp.com>



EON Reality

<https://eonreality.com>



Description of the method/tool



EON Reality offers an AI-powered, device-agnostic XR (Extended Reality) platform designed for education and industry. The platform enables users to rapidly convert existing training content or develop new, fully immersive and interactive learning modules—without any programming skills required. Leveraging both EON-XR and EON-AI, the system combines immersive 3D simulations with intelligent tutoring capabilities to create an engaging and adaptive learning ecosystem. Users can interact with virtual tools, objects, and environments in real time, enhancing knowledge retention and practical skill development. The platform supports deployment across VR headsets, AR-enabled mobile devices, desktops, and web browsers.

Advantages

- Immersive, practical skill development
- Flexible and scalable deployment across VR headsets, AR-enabled mobile devices, desktops, and web browsers

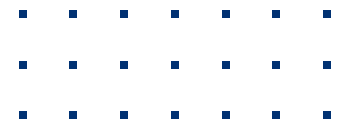
Disadvantages

- High technology requirements in terms of cost and availability
- Limited replacement for real-world experience

EON Reality's platform can be used in: Interactive Equipment Training: Simulate the operation of construction machinery such as excavators, cranes, and forklifts in a risk-free virtual environment.

ForgeFX Simulation

<https://www.forgefx.com>



Description of the method/tool



ForgeFX Simulations develops interactive 3D training simulations and virtual reality (VR) applications tailored for industrial and construction sectors. These simulations recreate real-world equipment, environments, and tasks to provide learners with hands-on experience in a virtual setting. The training solutions are often highly realistic and physics-based, supporting both desktop and immersive VR deployment.

Advantages

- Hands-on, risk-free learning (including the operation of heavy machinery)
- Realistic and physics-based simulations

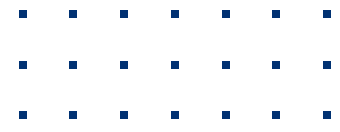
Disadvantages

- High technology requirements - VR equipment and compatible hardware
- Cannot fully replace real-world experience



ForgeFX Simulation

<https://www.forgefx.com>

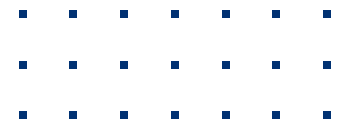


ForgeFX Simulations can be used to train learners in heavy equipment operation, site safety, and job-specific skills in a risk-free virtual environment, allowing mistakes to become learning opportunities without real-world consequences.



Unreal Engine Blueprint

<https://www.unrealengine.com/blueprint>



Description of the method/tool



Unreal Engine's Blueprint Visual Scripting is a powerful, node-based interface that allows users to build complex interactions and simulations without needing to write code. Blueprints are ideal for developing VR and interactive training environments, especially when paired with the engine's robust physics, lighting, and animation capabilities.

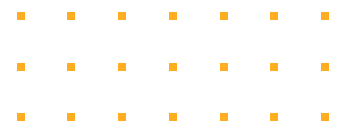
Advantages

- Requires no coding abilities, allowing educators and trainers to create complex VR interactions and simulations using drag-and-drop logic blocks
- Highly modular and adaptable, allow for fast customization of construction-specific training scenarios and gamified learning experiences.

Disadvantages

- Designing complex VR scenarios still requires training and practice.
 - Using VR modules effectively may require compatible VR hardware and familiarity with the Unreal Engine ecosystem
-

Unreal Engine Blueprint



<https://www.unrealengine.com/blueprint>

Potential Use in Construction VET

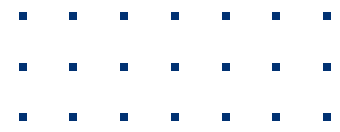
Unreal Engine Blueprint allows educators to create immersive VR training modules for construction tasks such as **scaffolding assembly, hazard recognition, and safe site entry**. Trainers can design inclusive, gamified, and customizable scenarios using drag-and-drop logic, existing templates, or community blueprints. This approach supports diverse learners, encourages interactive problem-solving, and provides hands-on experience in a safe virtual environment.

EU Project and Case Examples

Blueprints have been widely adopted in EU-funded VET initiatives to create realistic, task-based training. For instance, **Skills2Construction** developed VR modules for bricklaying and insulation installation, **VAM Realities** built cross-EU XR training environments for multiple institutions, and **INBOTS EU** created human-centred robotics simulations adaptable for construction tasks. These projects demonstrate Blueprint's flexibility, alignment with EU construction standards, and suitability for scalable, multi-language training.

OpenSpace3D

<https://www.openspace3d.com/en/>



Description of the method/tool



OpenSpace3D is an open-source software platform designed to build immersive AR/VR/MR environments without requiring advanced programming knowledge. It allows educators to integrate 3D models, interaction layers, and animations through a drag-and-drop “PlugITs” interface. It supports various VR headsets and mobile devices, making it flexible for diverse classroom or lab settings.

Advantages

- The drag-and-drop “PlugITs” interface allows educators to build interactive 3D environments
- Supports VR headsets, mobile devices, and desktops, allowing immersive training across different classroom or lab setups.

Disadvantages

- Designing complex VR scenarios still requires training and practice.
- Using VR modules effectively may require compatible VR hardware and familiarity with the Unreal Engine ecosystem

OpenSpace3D can be used to simulate construction sites and building processes in immersive AR/VR/MR environments. Learners can explore scaffolding, construction stages, safety scenarios, and accessibility challenges, providing risk-free, interactive training that supports spatial reasoning and inclusive learning.

Section 2:

Project-based learning platforms

Project-Based Learning (PBL) platforms are providing learners with opportunities to tackle authentic, real-world construction challenges in a guided, structured way. Unlike traditional instruction, which often focuses on theory, PBL emphasizes hands-on problem-solving, collaboration, and iterative learning, helping students develop practical skills that directly translate to workplace demands.

These platforms enable learners to work on complex construction projects, design tasks, or scenario-based challenges, often in digital, blended, or hybrid environments. They support critical thinking, teamwork, and project management, while also allowing instructors to monitor progress and provide timely feedback. For underrepresented learners, including women entering construction roles.

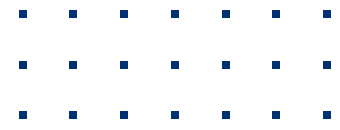


PBL offers a supportive and inclusive learning framework, where experimentation, creativity, and competence-building can happen in a low-risk, confidence-enhancing setting.

This chapter explores key PBL tools and platforms that have proven effective in construction VET, highlighting their potential to empower learners, enhance inclusion, and modernize teaching practices.

EduSourced

<https://www.edusourced.com>



Description of the method/tool



EduSourced is a platform for managing real-world, team-based projects sponsored by industry. It tracks learning outcomes, facilitates client interaction, and supports reflective learning and digital portfolios.

Advantages

- Real-world projects build work-readiness;
- Strong industry connection; portfolio creation.

Disadvantages

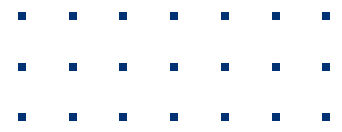
- Requires external industry partners;
- Higher setup/management effort from educators.

Educators can match students with real or simulated construction challenges, such as retrofitting a public building or optimizing logistics on a build site. Students work in teams, guided by both instructors and clients, mirroring professional processes and enhancing employment readiness.



Classcraft Quests

<https://www.classcraft.com>



Description of the method/tool



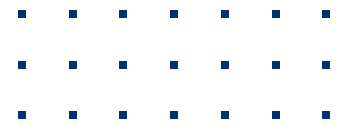
Classcraft is an online platform that gamifies the learning process by embedding lessons into immersive, role-playing storylines. Through “quests,” students advance in their educational journey by completing real tasks and assessments that are connected to modular construction topics. The platform integrates progress tracking, behavior reinforcement, and interactive storytelling mechanics.



Learners undertake applied challenges such as “Identify Sustainable Roofing Options” or “Respond to a Site Hazard,” within rich narrative contexts that simulate authentic construction scenarios. These quests facilitate interdisciplinary learning by blending construction skills with environmental science, digital safety, and project ethics. Role-based characters—such as architects, technicians, and sustainability officers—mirror real-world vocational roles, fostering a deeper sense of identity, responsibility, and collaboration among learners

Classcraft Quests

<https://www.classcraft.com>



Advantages

- High engagement through gamification
- Supports real-world skills
- Progress tracking and adaptive support

Disadvantages

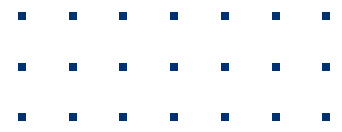
- Potential complexity for setup
- May not suit all learners

The platform stimulates learner engagement through fantasy-based immersion and immediate feedback while offering adaptive support via differentiated learning paths. Educators benefit from real-time dashboards for monitoring individual and team progress. Pedagogically, Classcraft supports self-regulated learning, structured problem-solving, and peer-based cooperation. It is particularly effective for engaging underrepresented learners by providing accessible, motivational pathways into technical subjects.



Autodesk Design Academy

<https://academy.autodesk.com>



Description of the method/tool

Autodesk Design Academy is a free, cloud-based learning platform offering project-based curricula in architecture, engineering, and construction. It provides students and educators access to Autodesk's industry-standard tools like AutoCAD, Revit, Fusion 360, and BIM 360, along with structured learning paths and certifications.

Advantages

- Access to industry-standard tools
- Supports real-world skills and projects
- Certification and career readiness

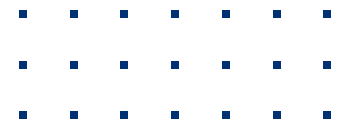
Disadvantages

- Steep learning curve
- Requires digital resources

This platform supports both individual and team-based learning and prepares students for certifications and entry into digital construction roles such as CAD technician, BIM coordinator, or junior designer.

Autodesk Design Academy

<https://academy.autodesk.com>



Description of the method/tool

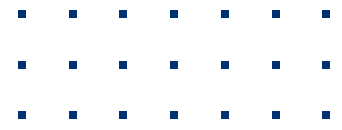
In construction VET, Autodesk Design Academy enables students to:

- Learn and apply 2D/3D CAD design, BIM modeling, and construction documentation
- Develop real-world design and build projects (e.g., floor plans, elevations, structural systems)
- Simulate building performance and sustainability factors
- Gain familiarity with digital workflows used by professional architects, engineers, and contractors



eXeLearning

<https://exelearning.net/en/>



Description of the method/tool

eXeLearning is a free, open-source authoring tool designed to help educators and trainers create structured, interactive, multimedia-rich learning resources. It allows users to design content without needing any programming skills and export it into widely-used formats (HTML5, SCORM, IMS, ePub). These learning objects can then be uploaded to LMS platforms like Moodle, Chamilo, or used offline.

Advantages

- No programming required
- Offline and flexible use
- Inclusive and adaptable

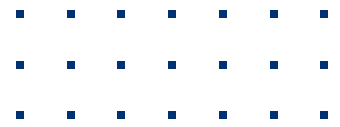
Disadvantages

- Limited advanced interactivity
- Dependent on careful design

Its offline and multilingual capabilities make it accessible to diverse learners and adaptable to various training environments. By combining structured guidance with hands-on activities, the platform supports both independent learning and practical skill development.

eXeLearning

<https://exelearning.net/en/>

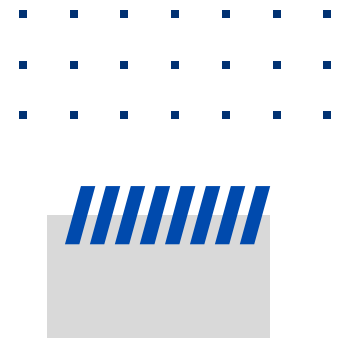


In construction VET, eXeLearning can be used to create modular, hands-on learning projects that simulate real-world tasks, such as designing sustainable wall systems or comparing concrete mixes. Educators can scaffold learning with background readings, technical standards, diagrams, and videos to guide students through complex processes. Interactive exercises like labeling PPE, sequencing construction steps, and self-assessment quizzes help learners apply knowledge practically and safely. Its multilingual and offline capabilities make it suitable for diverse learners and training environments with limited internet access.



ARIS (Augmented Reality Interactive Storytelling)

<https://fielddaylab.wisc.edu/aris-games/>



Description of the method/tool

ARIS is a free platform that enables educators and learners to create mobile-based, location-aware interactive experiences, including augmented reality (AR) games, branching narratives, and field-based projects. Users can develop learning activities using a visual editor and deploy them via the ARIS app (available on iOS).

Advantages

- Engaging, real-world learning
- Mobile and accessible
- Supports inclusive, gender-responsive training

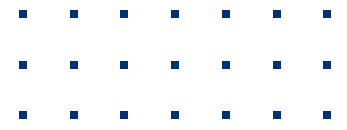
Disadvantages

- Device-dependent
- Potential setup complexity
- Limited offline functionality



ARIS (Augmented Reality Interactive Storytelling)

<https://fielddaylab.wisc.edu/aris-games/>

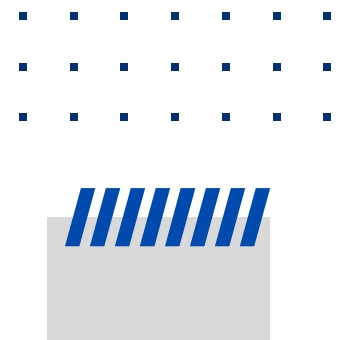


ARIS can be used in construction VET to create immersive, location-based learning experiences, such as GPS-triggered site walkthroughs where learners complete safety, planning, or material identification tasks. It also supports interactive role-play scenarios, allowing students to take on real-world construction roles and make decisions in context-specific challenges. Additionally, the platform enables team-based field investigations and collaborative problem-solving, while its story-driven, mobile format fosters inclusive, gender-responsive training by highlighting diverse perspectives in construction.



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Advantages

- Engaging, real-world learning
- Mobile and accessible
- Supports inclusive, gender-responsive training

Disadvantages

- Device-dependent
- Potential setup complexity
- Limited offline functionality



Section 3:

Online collaborative tools

While project-based learning (PBL) platforms provide the overarching framework for authentic, hands-on education, the effectiveness of such approaches depends heavily on how learners and instructors collaborate. In today's construction training environments—often hybrid, digital, or cross-border—online collaboration tools have become essential for enabling teamwork, coordination, and communication.

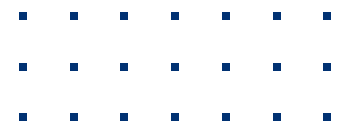
These tools range from interactive whiteboards and project management platforms to secure file-sharing environments and virtual classrooms. They allow learners to brainstorm ideas, co-develop technical drawings, manage project timelines, and exchange feedback in real time, regardless of whether they are on-site, in the classroom, or working remotely. Importantly, they also help educators scaffold group projects, track individual contributions, and ensure inclusive participation—creating opportunities for all learners.

This section introduces a range of online collaboration tools—from visual whiteboards like Miro, Conceptboard, and FigJam, to organizational platforms like Notion, Asana, and Nextcloud, as well as communication systems such as Microsoft Teams and BigBlueButton.



Conceptboard

<https://conceptboard.com>



Description of the method/tool

Conceptboard is a real-time, visual collaboration space for brainstorming, annotation, and team communication. It includes infinite canvases, markup tools, and integrated task management.

Advantages

- Live visual collaboration;
- Supports architectural markup and iterative feedback

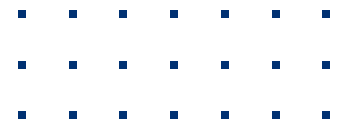
Disadvantages

- Can be complex to navigate at first;
- High bandwidth needed for large boards.

Used to review construction site layouts, brainstorm material plans, or coordinate team feedback on design documents. Especially beneficial for remote or hybrid groups, including women managing study-career balance. Also supports visual literacy and collaboration aligned with industry BIM workflows.

Trello (Education Access)

<https://trello.com>



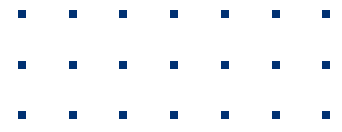
Description of the method/tool

Trello is a flexible, web-based project management platform based on the Kanban methodology. It allows learners to visually track project progress through customizable boards, lists, and cards. Trello supports a wide range of construction-related educational tasks, including resource planning, phase tracking, budget coordination, and safety checklists. Its drag-and-drop interface makes it accessible for learners of varying digital skill levels, while integrations with tools like Google Drive, Slack, and Microsoft Teams allow for more complex collaboration scenarios.



Trello (Education Access)

<https://trello.com>



Advantages

- Visual and flexible project management
- Supports collaboration and integration

Disadvantages

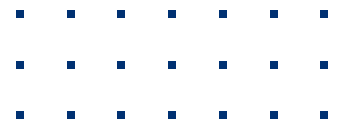
- Potential complexity in larger projects
- Limited free tier features

Trello is used for collaborative construction planning, task delegation, and real-world scenario integration—such as managing project delays, adapting to changing client needs, or tracking compliance milestones. It supports multi-phase learning modules, scaffolded workflows, and promotes structured teamwork across different vocational tasks. The platform reinforces collaborative learning and iterative planning processes, encourages student ownership of group responsibilities, and builds essential skills in digital project coordination, scheduling, and documentation. Trello offers a free educational tier that includes team collaboration tools and integration with platforms such as Google Drive, Slack, and Microsoft Teams.



Notion

<https://www.notion.so>



Description of the method/tool

Notion is an all-in-one digital workspace that combines documents, databases, Kanban boards, tables, and calendars. It is free for students and educators and supports flexible content structuring and team collaboration.

Advantages

- All-in-one flexible workspace
- Supports complex project simulation
- Facilitates collaboration and feedback

Disadvantages

- Learning curve
- Potential for overcomplication



Notion

<https://www.notion.so>

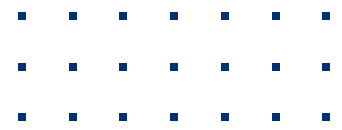


Notion can be used by students to design and manage complete construction project scenarios. For example, they can create a digital project space for “Planning the Construction of a Family House,” including design sketches, technical specifications, materials checklists, work schedules, and cost estimates. It allows for the integration of multimedia content and templates, which makes it ideal for simulating complex, real-world tasks within the learning environment. It also supports asynchronous teamwork and teacher-student feedback loops.



Miro

<https://miro.com>



Description of the method/tool

Miro is a collaborative online whiteboard tool that enables teams to visualize ideas and projects. It includes templates for Gantt charts, brainstorming boards, flowcharts, and more.

Advantages

- Creative tool for dynamic team sessions;
- Intuitive interface; supports templates for design workflows.

Disadvantages

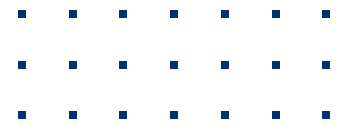
- Free tier limited;
- Clutter risk if poorly managed;
- Not ideal for final documentation

Students can collaboratively plan construction timelines or risk assessments, visualize technical workflows, or conduct digital design charrettes. Particularly useful in hybrid learning models and cross-border group projects. Encourages inclusive communication and soft skill development.



Padlet

<https://padlet.com>



Description of the method/tool

Padlet is a simple and intuitive collaborative platform where users can create digital boards to post text, images, videos, documents, and links. It supports real-time updates and comments, making it an excellent tool for gathering input or presenting group work.

Advantages

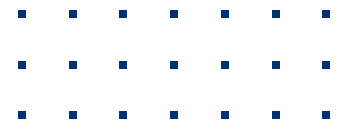
- User-Friendly and Visual;
- Versatile Resource Sharing

Disadvantages

- Limited Free Version;
- Risk of Information Overload If Poorly Managed

Padlet can be used by construction VET students to gather and organize research for a project, present ideas for materials or methods, or create virtual pinboards of construction techniques from different cultures or contexts. It can also serve as a discussion wall during lessons, enabling remote students to participate equally with in-person learners. Its ease of use and visual format make it accessible for all learners.

diagrams.net



<https://app.diagrams.net/>



Description of the method/tool

Diagrams.net (formerly Draw.io) is a free, web-based diagramming tool that enables users to create a variety of technical and visual diagrams such as flowcharts, site plans, organizational charts, and process maps. It offers an intuitive drag-and-drop interface with a rich library of shapes and symbols commonly used in construction and engineering fields. Diagrams.net supports real-time collaboration when connected to cloud storage services like Google Drive or OneDrive, allowing multiple users to work on the same diagram simultaneously. The platform is open source and accessible without registration, making it a cost-effective and flexible option for educational and professional use.

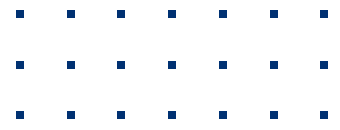
Advantages

- Creative tool for dynamic team sessions;
- Intuitive interface; supports templates for design workflows.

Disadvantages

- Free tier limited;
 - Clutter risk if poorly managed;
 - Not ideal for final documentation
-

diagrams.net

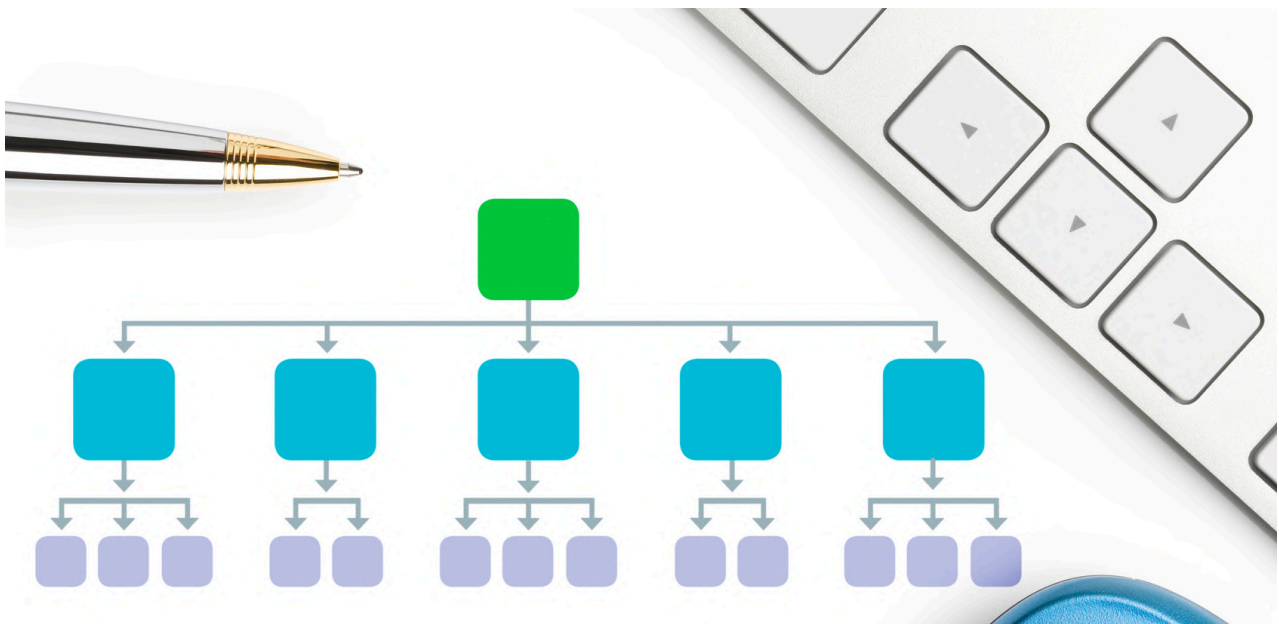


<https://app.diagrams.net/>



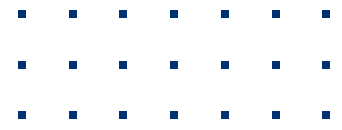
Diagrams.net can be a highly effective tool in construction VET for creating, sharing, and collaborating on technical diagrams, workflows, and project plans. Instructors can design clear visualizations of construction processes, site layouts, safety protocols, and structural diagrams, helping learners understand complex concepts through visual representation.

Students can collaborate in real time on tasks such as breaking down building projects, mapping material flows, or illustrating machinery operations. This hands-on diagramming encourages teamwork and problem-solving by allowing learners to organize information, identify issues, and propose solutions visually. Additionally, with cloud integration, projects can be accessed from anywhere, supporting remote or blended learning.



Google Workspace

<https://workspace.google.com>



Description of the method/tool

Google Workspace is a cloud-based suite of productivity and collaboration tools including Gmail, Google Drive, Docs, Sheets, Slides, and Google Meet. It enables real-time collaboration, file sharing, and communication from any device.

Advantages

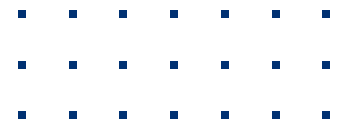
- Comprehensive Tool Suite;
- Cloud Integration.

Disadvantages

- Data Privacy Concerns;
- Feature Limitations in Free Version

Students can collaborate on construction reports, schedules, and project plans using Google Docs and Sheets, while Google Drive provides a central space to store and organize site photos, CAD drawings, and presentations. Virtual meetings and project reviews can be conducted through Google Meet, and material orders, safety checklists, and Gantt charts can be tracked in Sheets. Shared folders and calendars help organize group projects and assessments, supporting efficient teamwork and project management.

Stormboard



<https://www.stormboard.com>



Description of the method/tool

Stormboard is an online collaborative whiteboard and brainstorming tool that lets users create structured sticky-note boards, diagrams, and project canvases in real time. It also includes voting, reporting, and task management features.

Advantages

- Project Tracking and Reporting
- Real-Time Visual Collaboration

Disadvantages

- Limited Free Version
- Learning Curve for New Users

In construction VET, students can collaboratively map out workflows from demolition to handover, use brainstorming boards to identify site risks, safety procedures, or sustainability strategies, and participate in group design charrettes or site planning simulations with instant feedback. Instructors can visually track student input and assess understanding of construction processes, supporting interactive and practical learning.



Microsoft Teams

<https://www.microsoft.com/en-us/microsoft-teams>

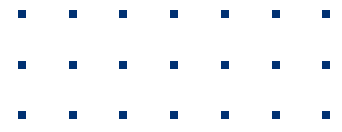
Description of the method/tool

Microsoft Teams is a communication and collaboration platform that integrates chat, video conferencing, file sharing, and Microsoft 365 tools like Word, Excel, and PowerPoint. It supports team-based workspaces and project management channels, allowing users to organize tasks, share resources, and collaborate in real time. The platform is particularly useful in educational and professional settings for coordinating group projects, conducting virtual meetings, and maintaining a centralized record of communications and documents.



Microsoft Teams

<https://www.microsoft.com/en-us/microsoft-teams>



Advantages

- Centralized Collaboration (Chat, video, and document sharing in one platform)
- Integration with Microsoft 365 (Word, Excel, OneNote, and other)

Disadvantages

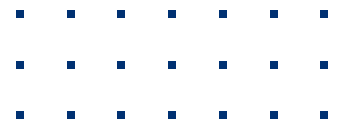
- Requires a Microsoft Account
- Can Be Overwhelming

Microsoft Teams can be used to create dedicated channels for student projects or training cohorts, conduct virtual toolbox talks, project meetings, and safety briefings via video calls, and share and collaborate on blueprints, plans, and schedules using Excel or Word. OneNote can be integrated for fieldwork logs and reflective learning journals, supporting both practical documentation and collaborative learning.



Asana

<https://asana.com>



Description of the method/tool

Asana is a project management tool that helps teams organize work using task lists, boards, timelines, and calendars. It supports collaboration, deadline tracking, and progress monitoring in real time.

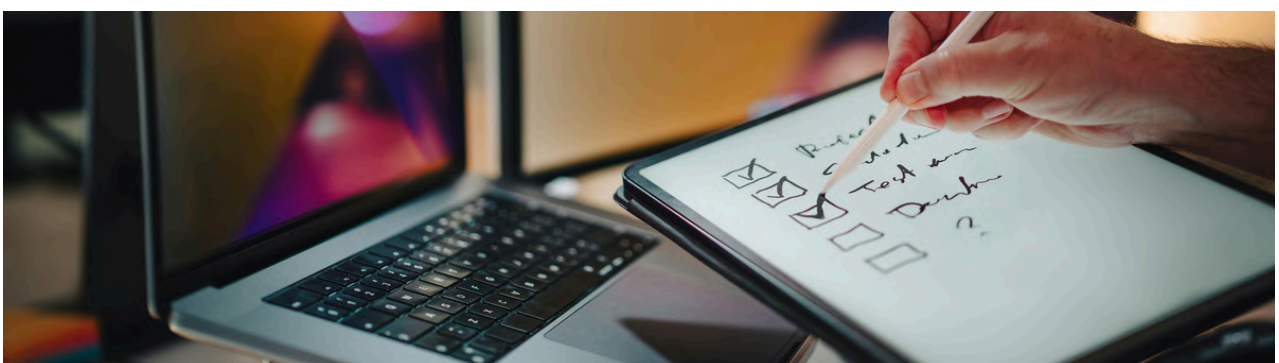
Advantages

- Organized Workflow
- Progress Tracking

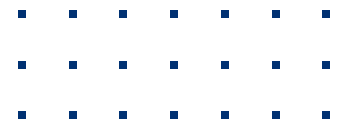
Disadvantages

- Potential Over-Structuring
- Learning Curve for New Users

Students can break down projects into task lists, assign roles such as site manager, safety officer, and procurement lead, and use timelines to visualize schedules and task dependencies. Instructors and students can monitor team progress on collaborative builds or capstone projects in real time, supporting organized, practical, and interactive learning.



BigBlueButton



<https://bigbluebutton.org/>

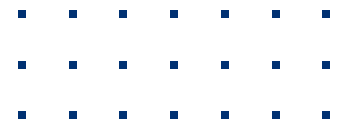
Description of the method/tool



BigBlueButton (BBB) is a video conferencing and virtual classroom tool designed for education and training, offering real-time audio/video conferencing, breakout rooms, shared whiteboards, live chat, polling, screen sharing, and collaborative note-taking via Etherpad. It integrates with Moodle and other LMS platforms, making it ideal for project-based and blended learning. In construction VET, BBB supports remote teamwork and virtual site-based learning by enabling learners to plan group tasks, use breakout rooms for role-play, participate in virtual simulations and demonstrations, and annotate shared blueprints or site images. It also fosters inclusive presentation and leadership practice, encourages real-time peer feedback, and allows trainers to monitor progress, discuss safety protocols, and reflect on communication and decision-making in collaborative projects.



BigBlueButton



<https://bigbluebutton.org/>



Advantages

- Integration with LMS – Works seamlessly with Moodle and other platforms
- Interactive and Collaborative – Supports breakout rooms, shared whiteboards, live chat, etc.

Disadvantages

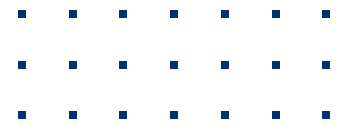
- Learning Curve for breakout rooms or annotation tools
- Limited Advanced Features (e.g., high-end video editing or analytics) are not available)

BigBlueButton provides a safe space for learners to participate on their own terms, fostering teamwork and communication—critical soft skills for construction sites and leadership roles. Its accessibility and flexibility, including mobile access, low-bandwidth support, and multilingual interfaces, make it suitable for inclusive learning across EU regions.



Nextcloud

<https://nextcloud.com/>



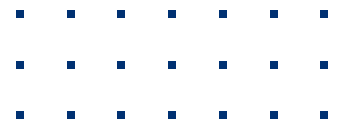
Description of the method/tool

Nextcloud is an open-source collaboration platform that enables secure file storage, sharing, and teamwork, including document editing, calendars, task lists, chat, video conferencing, and project management tools. In construction VET, it supports collaborative file management for project documentation and resources, real-time co-editing of reports or cost estimations, and task organization using Kanban boards. Built-in calendars and reminders help coordinate meetings, deadlines, and virtual site tours, while encrypted chat and video tools provide a safe, inclusive environment for all learners, including remote participants.



Nextcloud

<https://nextcloud.com/>



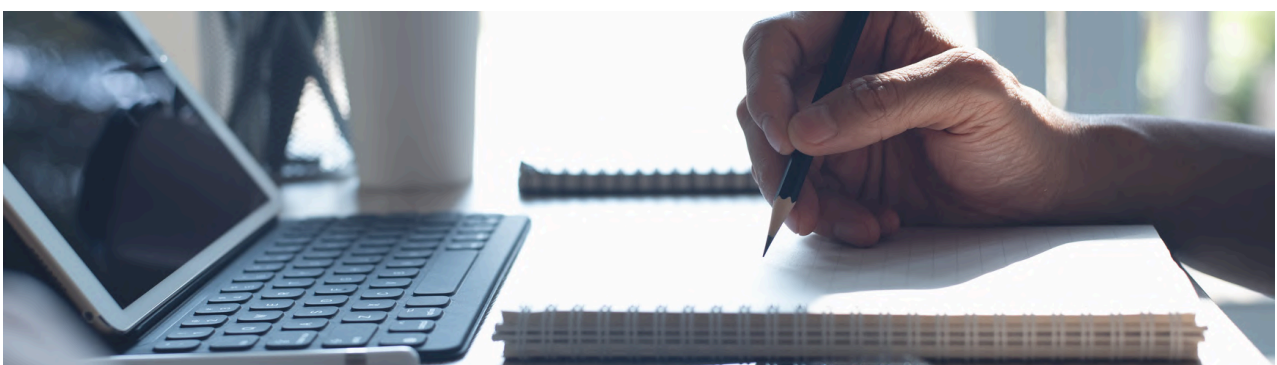
Advantages

- Comprehensive Collaboration – file sharing, co-editing, project management, and communication in one platform
- Secure and Controlled – all data is encrypted and can be hosted under institutional control

Disadvantages

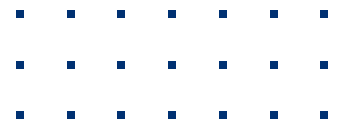
- Dependent on Hosting and Maintenance
- Potential Overload of Features

Nextcloud provides a safe and monitored digital environment, empowering women to take leadership roles in organizing tasks, managing documentation, and presenting outcomes. Its flexible access from home, mobile devices, or low-bandwidth settings supports learners with caregiving responsibilities or in rural areas, while self-paced use builds confidence through project ownership. The platform is available in many EU languages and is already used in Erasmus+ projects and public VET institutions, making it highly relevant for inclusive vocational training.



FigJam

<https://www.figma.com/figjam/>



Description of the method/tool

FigJam is an online whiteboard for teams to ideate and brainstorm together. Created by the design software company Figma, it is incredibly intuitive and fun to use. It offers features like sticky notes, drawing tools, shapes, "was-it" voting dots, and a library of pre-built templates for things like flowcharts and project kick-offs. FigJam is free for students and educators through Figma's education plan, which provides full access to both FigJam and the professional Figma design tool.

Advantages

- Easy to Use – intuitive interface makes it accessible for learners with varying digital skills.
- Free for Education – students and educators get full access to FigJam and Figma via the education plan.

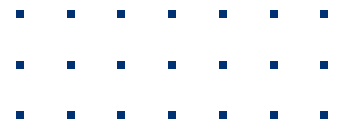
Disadvantages

- Limited for Detailed Technical Work
- Potential for Overcrowded Boards



Mural

<https://www.mural.co/>



Description of the method/tool

Mural is another powerful digital whiteboard designed to facilitate visual collaboration. It is heavily focused on guided collaboration, offering a vast library of templates and frameworks for structured activities like SWOT analysis, project planning, and design sprints. It includes features like private mode for individual brainstorming before a group share, a timer to keep activities on track, and voting tools to help teams make decisions. Mural offers a free plan with three murals and unlimited members, and also provides free, full-featured accounts for educators.

Advantages

- Supports Individual and Group Work
- Free Educational Access

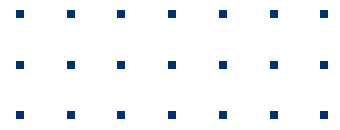
Disadvantages

- Limited Free Plan for General Users
- Students may need time to navigate templates, timers, and collaborative tools effectively



Mural

<https://www.mural.co/>

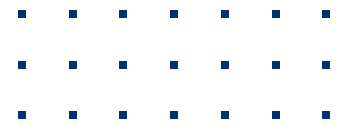


Mural is excellent for more structured visual tasks. An educator could use Mural to have students collaboratively fill out a "Project Canvas" template to define the scope, goals, and stakeholders of a simulated construction project. It's also a great tool for "retrospectives" where students can reflect on a completed project, using sticky notes to post what went well, what could be improved, and what they learned



Coda

<https://coda.io/>



Description of the method/tool

Coda is a collaborative document platform that blends the flexibility of a document, the structure of a spreadsheet, and the power of applications into a single canvas. A Coda "doc" can contain interactive elements like buttons that trigger actions, tables that sync with each other, and formulas that go far beyond what standard spreadsheets can do. It's designed to allow teams to build their own tools and workflows without needing to code. The free plan is quite generous, offering sizable docs and core building blocks.

Advantages

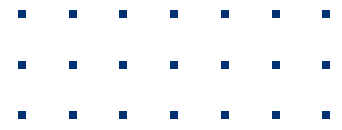
- Highly Customizable
- Generous Free Plan

Disadvantages

- Potential Complexity
- Limited Integration Features



Coda



<https://coda.io/>



Coda is perfect for creating custom, interactive learning tools. An educator could build a Coda doc that acts as an interactive project calculator. Students could input the dimensions of a room, and the doc would automatically calculate the required amount of paint, flooring, and trim. Another use could be creating a "Daily Site Report" template where students use buttons to log the day's activities, track on-site personnel, and report any safety incidents, all within a single, organized document.

Section 4:

Gamification strategies

Building on the collaborative and project-based frameworks explored in the previous chapter, gamification strategies offer an additional layer of engagement and motivation for learners. By introducing game-inspired elements—such as challenges, points, digital badges, interactive simulations, and role-play—educators can make construction vocational education and training (VET) more immersive, dynamic, and learner-centered.

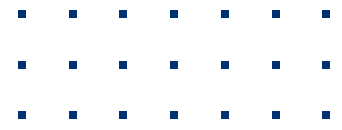
Gamification taps into the natural human drive for achievement, competition, and recognition. In construction VET, these strategies can simulate real-world scenarios, project management challenges, and site-based decision-making in a low-risk, controlled environment. Learners gain practical experience in planning, problem-solving, and teamwork while receiving instant feedback on their actions.



This section presents a variety of gamification strategies suitable for construction VET, outlining their pedagogical purpose, practical advantages, and potential applications. Together, they demonstrate how game-based methods can enrich vocational learning, foster inclusion, and prepare students for the complex, collaborative, and adaptive nature of modern construction work.

H5P

<https://h5p.org/>



Description of the method/tool

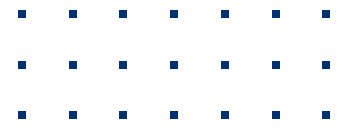
H5P is an open-source online platform that enables educators to create, share, and reuse interactive HTML5 content and gamified learning activities. It offers a wide range of content types such as quizzes, drag-and-drop exercises, interactive videos, flashcards, timelines, and games. H5P content can be integrated into popular learning management systems (LMS) like Moodle, WordPress, and Canvas, or used standalone. Its interactive and gamified elements provide instant feedback and engaging challenges that help motivate learners and improve retention. Being open-source, H5P encourages sharing and adapting materials, supporting flexible and innovative teaching approaches.



Trainers can develop low-barrier gamified content around construction tools, safety signage, or project steps. Activities support repetition and differentiation, ideal for learners with diverse educational backgrounds or limited prior experience.

Simformer

<https://simformer.com>



Description of the method/tool

Simformer offers immersive business simulation games that focus on project management, budgeting, and resource allocation, providing learners with a practical understanding of decision-making in construction-related scenarios. Its advantages include fostering strategic thinking, encouraging experiential learning, and helping students understand the business logic behind managing projects, resources, and timelines in a simulated construction environment. However, its disadvantages are that it is primarily focused on business and management aspects, making it less suitable for teaching detailed technical skills such as welding, scaffolding, or hands-on site techniques.

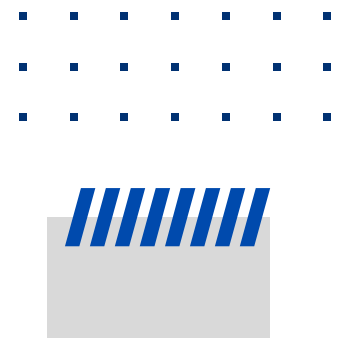


Learners take charge of simulated construction projects, making decisions on budgeting, staffing, and risk. Ideal for teaching systems thinking and strategic planning. Can be blended with real-world capstone assignments or flipped classroom sessions.

Badge-Based Skill Progression (via Badgr or Canva)

<https://www.canva.com>

<https://badgr.com/>



Description of the method/tool

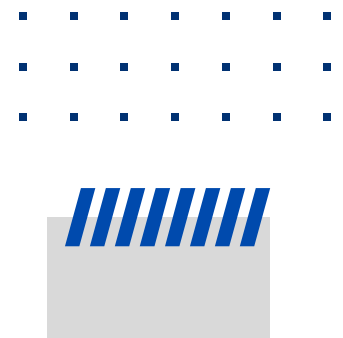
This strategy integrates digital badge acquisition with VET learning outcomes, enabling learners to earn visual micro-credentials that document mastery in specific competencies. These badges can be aligned with CEKDEV's modular training structure and reflect a learner's progress across both technical and transversal skills. The process involves issuing badges such as "Eco-Design Strategist," "Site Safety Lead," or "Teamwork Facilitator," tied to task-based assessments and peer-reviewed milestones. The badge ecosystem is enriched with visual storytelling elements—for example, learners may develop a short storyboard or digital reflection explaining the learning journey behind a badge, thus fostering credential literacy and metacognitive reflection.



Badge-Based Skill Progression (via Badgr or Canva)

<https://www.canva.com>

<https://badgr.com/>

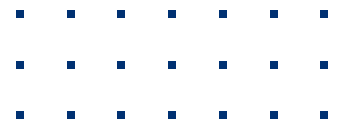


This gamification strategy links digital badge acquisition to construction VET modules such as sustainability, safety, and coordination. Badges represent demonstrable skills achieved through authentic tasks and are embedded into modular training curricula. They can be integrated into virtual learning environments like Moodle and exported in Europass-compatible formats, enhancing portability across European qualification frameworks. Learners complement badge attainment with reflective evidence—such as Canva-designed visual storyboards or recorded video/audio narratives—documenting the personal learning process. Pedagogically, this approach promotes learner agency, enhances motivation through visible progression, and fosters transparency in formative assessment. It supports differentiated learning pathways while simultaneously reinforcing vocational identity and boosting employability through recognized, skill-based digital credentials.



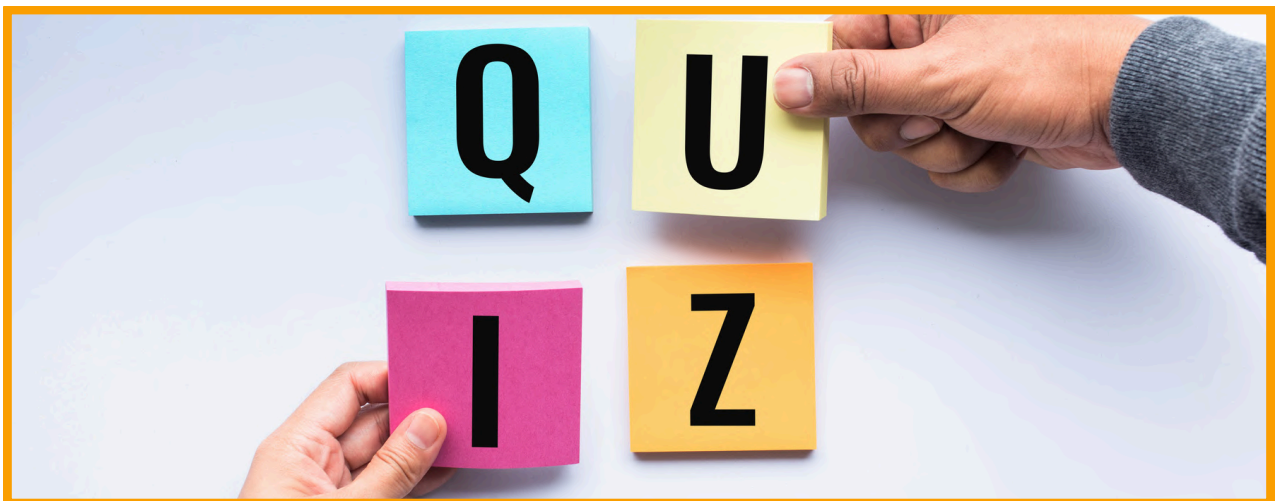
Kahoot

<https://kahoot.com>



Description of the method/tool

Kahoot! is an interactive game-based learning platform that allows educators to create quizzes, surveys, and challenges in the form of games. Learners can participate using their smartphones, tablets, or computers in real time, competing with classmates while reinforcing key concepts. The platform includes features such as leaderboards, timers, and multimedia content to enhance engagement and motivation.



Kahoot! can be used in construction VET classrooms to review safety protocols, construction terminology, equipment knowledge, or regulations through competitive quizzes. Instructors can use it at the end of lessons to test understanding or as a warm-up activity to activate prior knowledge. It supports both in-class and remote learning, making it flexible for blended and hybrid models. The competitive, gamified format encourages active participation and improves knowledge retention.

Construction Challenge Simulation (“Build-a-City” Model)

<https://kahoot.com/>

<https://deck.toys/>



Description of the method/tool

This simulation-based gamification strategy transforms the classroom into a collaborative urban development lab. Learners work in teams to design and construct a fictional city block while responding to real-world VET challenges such as budget constraints, environmental sustainability requirements, and inclusive infrastructure design. Teams earn points or digital tokens through platforms like Kahoot!, Deck.Toys, or even Google Forms with leaderboard scripts. Points are awarded for creative solutions, stakeholder satisfaction, use of sustainable materials, and adherence to safety regulations. The game includes embedded checkpoints aligned with learning outcomes such as planning, problem-solving, and documentation.



Construction Challenge Simulation ("Build-a-City" Model)

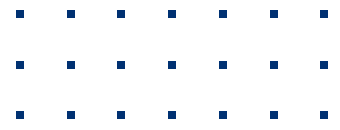
<https://kahoot.com/>

<https://deck.toys/>



The model encourages competition and cooperation simultaneously, with roles (e.g., Safety Officer, Budget Planner, Green Designer) rotating among students to ensure inclusive participation. It builds systems thinking, enhances communication, and integrates digital planning tools like Trello, Conceptboard, or CoSpaces Edu. By the end of the simulation, students generate digital artifacts—presentations, budgets, site models—that can be incorporated into their micro-credential portfolios.





<https://quizizz.com/>



Description of the method/tool

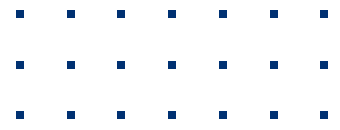
Quizizz is a free online game-based learning platform that allows educators to create quizzes in a competitive and interactive format. Learners can join live sessions or complete quizzes asynchronously. The platform includes features such as real-time leaderboards, power-ups, memes, music, and instant feedback. It also offers a vast public library of ready-made quizzes across a range of subjects, which can be edited and reused.

In construction vocational education and training (VET), Quizizz can be used to test knowledge of safety protocols, construction tools, material identification, and technical standards. Teachers can integrate quizzes as formative assessments at the end of lessons or create engaging weekly competitions to boost motivation and participation. For example, students could compete in a "Weekly Toolbox Champion" quiz to reinforce terminology and safety rules.

Quizizz supports both in-person and remote learning, offering flexibility for blended and distance education. Its gamified format promotes higher engagement, immediate feedback, and improved knowledge retention through repetition and competition.



Word wall



<https://wordwall.net/>

Description of the method/tool

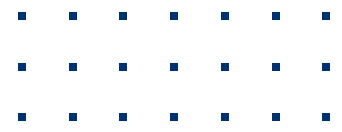


Wordwall is an online tool that allows educators to create interactive, game-based learning activities. It supports a variety of formats such as quizzes, matching pairs, word games, sorting tasks, and more. These activities can be used both in the classroom and online, offering flexibility for blended or remote learning environments. Wordwall's gamified approach helps engage learners by making repetition and review more dynamic and enjoyable. It is especially effective for reinforcing vocabulary, testing understanding of key concepts, and encouraging active participation. Learners can interact with the activities individually or as part of a group, making it a useful tool for both self-paced and collaborative learning.



Wordwall can be used in construction VET to support the learning and reinforcement of theoretical content in an interactive format. For example, trainers can create vocabulary games focused on technical terms related to tools, materials, safety procedures, or construction processes. These can help learners—especially those with lower language proficiency or literacy levels—build essential terminology in a more engaging and accessible way.

IBM SkillsBuild



<https://skillsbuild.org/>

Description of the method/tool



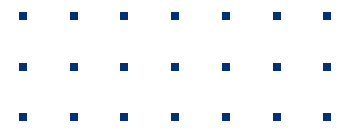
IBM SkillsBuild is a free online learning platform designed to help learners develop technical and professional skills relevant to today's job market. It offers a wide range of courses in areas such as artificial intelligence, cybersecurity, data analysis, and cloud computing, as well as workplace skills like design thinking. Learners can earn IBM-branded digital credentials upon successful completion of courses, which can be shared with potential employers to showcase their competencies. The platform supports self-paced learning and is accessible to high school students, college students, adult learners, and educators.



In the context of construction Vocational Education and Training (VET), IBM SkillsBuild can be used to complement traditional training by offering learners flexible access to foundational knowledge in areas increasingly relevant to the industry. Courses in project management, data analysis, and design thinking can help deepen understanding of modern construction processes and tools. The platform also supports learners in developing broader workplace skills, such as communication, problem-solving, and digital literacy—skills that are valuable across a range of construction-related roles.

Moodle with Gamification Plugins

<https://moodle.org>



Description of the method/tool

Moodle is an open-source Learning Management System (LMS) widely used in education and training. It supports a modular structure and can be enhanced with a variety of gamification plugins such as badges, points, leaderboards, progress bars, and interactive quizzes. These plugins help make learning more engaging and motivate learners through game-like elements embedded directly into the course content.

In construction VET, trainers can design gamified modules that cover areas such as safety, equipment operation, and site management, with learners earning badges as they reach milestones. Progress bars and leaderboards help motivate students to complete tasks and assessments, while interactive quizzes and scenario-based challenges can be used to build skills like blueprint reading or hazard identification. Project-based assignments can be structured to encourage both collaboration and friendly competition, simulating real construction work.

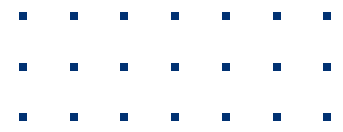
Throughout the process, learner progress is tracked across trade competencies, with immediate feedback provided to support mastery and continuous improvement.



Genially (Free Version)

<https://www.genial.ly>

Description of the method/tool



Genially is a free-to-use, web-based platform that allows educators to create highly interactive and gamified digital learning content. This includes quizzes, infographics, visual storytelling, escape rooms, branching narratives, interactive images, and more. The tool is widely adopted in the EU education sector for its intuitive interface, engaging visuals, and collaborative functionality.



Genially allows trainers to create highly interactive learning experiences without requiring coding skills. Its support for multiple languages makes it ideal in European contexts, and content can be easily embedded into platforms like Moodle or shared directly via links, ensuring flexibility across blended, remote, and face-to-face settings.

In practice, Genially can be used to design interactive case studies where learners make real-world decisions, build digital escape rooms to solve technical or safety-related puzzles, or create scenario-based stories that place students in roles such as project leader, site engineer, or safety inspector. It also offers opportunities to highlight women's contributions to construction through timelines and role-based narratives, helping to challenge stereotypes and promote gender inclusion.

Europeana Classroom

<https://www.europeana.eu/en/collections/topic/36-classroom>

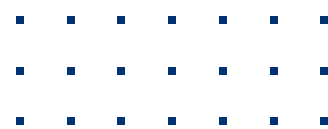
Description of the method/tool

Europeana Classroom is part of Europeana.eu, a platform funded by the European Commission that provides access to millions of openly licensed digital cultural heritage resources (images, texts, videos, audio, 3D models). The "Classroom" section curates curriculum-aligned learning activities, games, and toolkits based on primary historical sources—freely available for educators across Europe.



This OER platform emphasizes project-based learning, inquiry, digital storytelling, and gamified educational experiences, including timelines, puzzles, and role-play activities. It is ideal for integrating cultural heritage and gender equity themes into VET education.

Europeana Classroom



<https://www.europeana.eu/en/collections/topic/36-classroom>



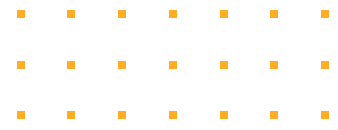
In construction VET, Europeana Classroom can be used to connect technical training with cultural and historical perspectives through gamified and project-based activities. Learners might work with historical photos and blueprints from the archives to reconstruct or analyze old buildings, exploring themes like sustainable retrofitting and heritage conservation.



Trainers can also design gamified history challenges or scavenger hunts that highlight the contributions of women in fields such as architecture, urban planning, and engineering, while digital storytelling projects encourage students to research and present the history of local buildings with gender-diverse narratives. Role-play activities, such as acting as town planners or post-war reconstruction teams, immerse learners in real historical contexts and decision-making processes, while multilingual resources support inclusivity for learners from different linguistic backgrounds.



Closing Words



We hope this resource has provided you with fresh, practical approaches to harnessing digital innovation in vocational education and training for construction.

By exploring digital simulations, project-based learning platforms, online collaborative tools, and gamification strategies, our aim is to support educators in creating more engaging, inclusive, and future-oriented learning environments.



This publication is part of the ConstructHER Future project, which continues to design and share tools, strategies, and resources for gender-inclusive vocational education. To learn more and access additional materials, please visit:

<https://constructherfuture.eu/>

Together, we can build a more innovative, equitable, and resilient future for the construction industry.



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CONSTRUCTHER **FUTURE**

SET OF INNOVATIVE DIGITAL TEACHING TOOLS AND METHODOLOGIES

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