



Building Green Together
Digital Platform for Green Construction Learning

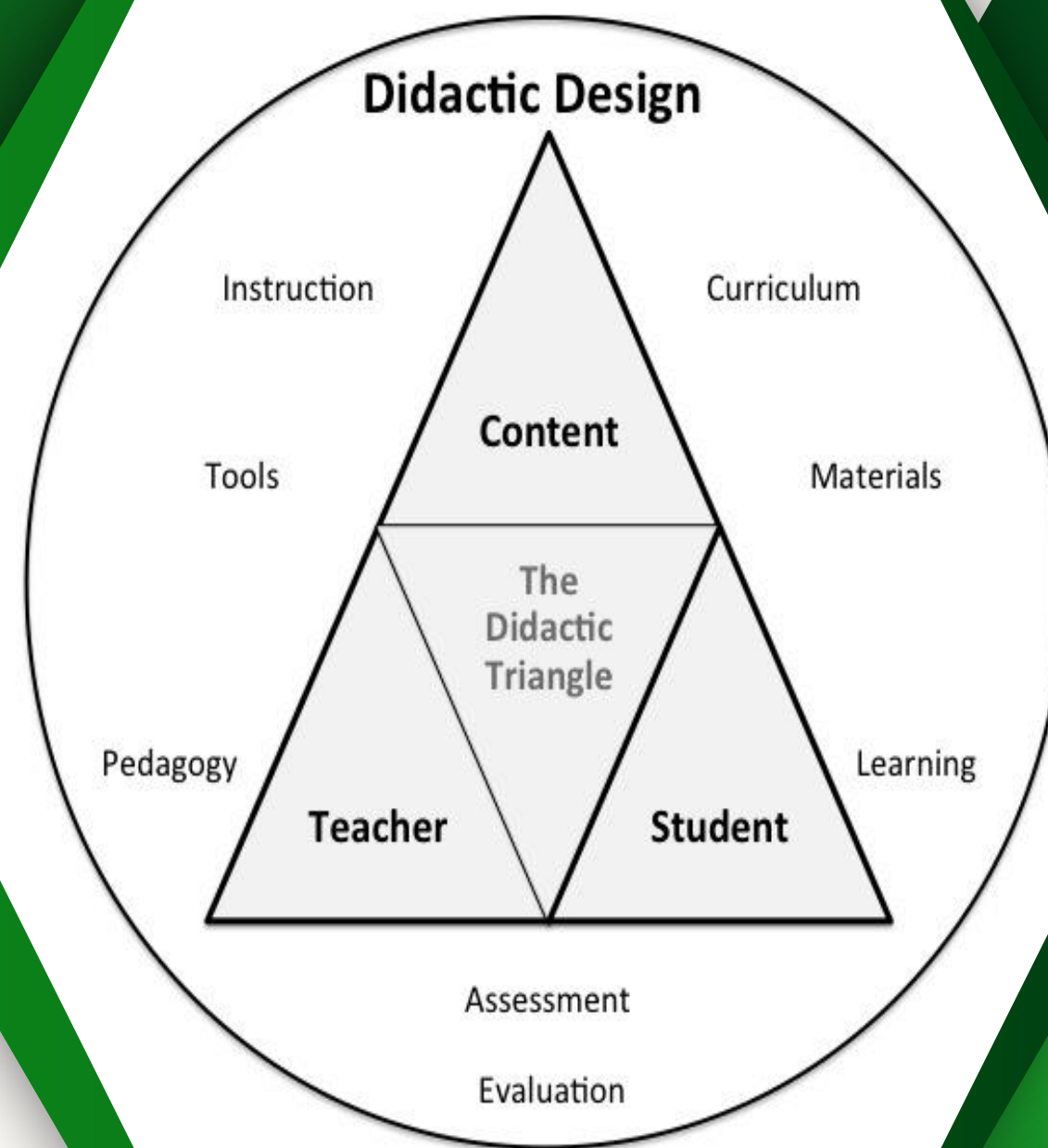


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Didactic methodologies and Assessment

**Partnership for green models in the vocational training of
construction workers, project number: KA2 - Agreement Number:
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Social Media

<https://ecobuildtraining.eu/index.php?lang=en>

Educational objectives and vision

Up-Skilling Construction Workers

Equipping vocational trainers and workers with actionable methodologies to master ecological building practices, bioclimatic standards, and resource efficiency on real job sites.

From Theory to Active Practice

Moving from traditional passive lectures toward competency-based, interactive learning models that simulate modern eco-construction challenges and site conditions.



Didactic methodologies and Assessment

Content:

- ✓ 1. Classroom Planning
- ✓ 2. Educational Tools
- ✓ 3. Teaching methodologies
- ✓ 4. Design Practical Activities
- ✓ 5. Assessment and Rubrics



PROJECT-BASED LEARNING



TEACHER-CENTERED



MONTESSORI



INQUIRY-BASED LEARNING

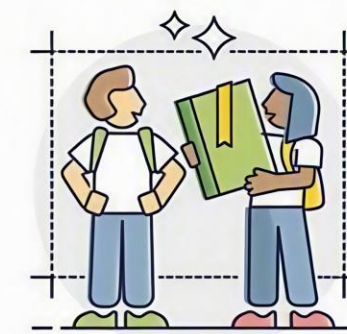
TEACHING METHODS



FLIPPED CLASSROOM



COOPERATIVE LEARNING



STUDENT-CENTERED
CONSTRUCTIVIST APPROACH



PERSONALIZED EDUCATION

Classroom Planning

QUESTIONS	BASIC COMPONENTS
What are the expected learning outcomes for the students?	Educational objectives (assessment criteria, learning standards)
What “knowledge” or experiences are required to achieve them?	Content
How will the learning experiences be developed?	Methodological strategies, activities and timing
What, how and when is it important to check achievement?	Learning assessment
What means/resources will we use?	Teaching resources



Educational Tools

eLearning

eLearning refers to online training on any digital device, such as watching educational videos, reading articles, taking quizzes or tests, and using augmented or virtual reality. One of the advantages of e-learning is the ability to access it from wherever you are.

For example, thanks to virtual reality courses, construction workers receive better training in risk prevention.

e-Learning is the medium, but within it, there is a vast array of programs we can use to create educational resources, our learning tools





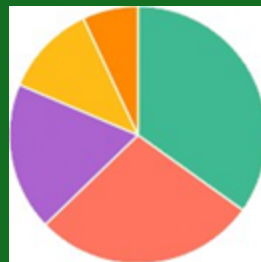
<https://edpuzzle.com>



<https://exelearning.net/en/home-2/>



<https://explaineverything.com/>



<https://strawpoll.com/>



<https://www.wix.com/>

Learning Tools

- Edpuzzle: create Video Lesson
- eXelearning: Create educational content for different media
- ExplainEverything: Whiteboard
- Strawpoll: a polling system specifically designed to create these tools quickly, simply, and accessibly
- WIX: create your own website, edit everything



Teaching methodologies

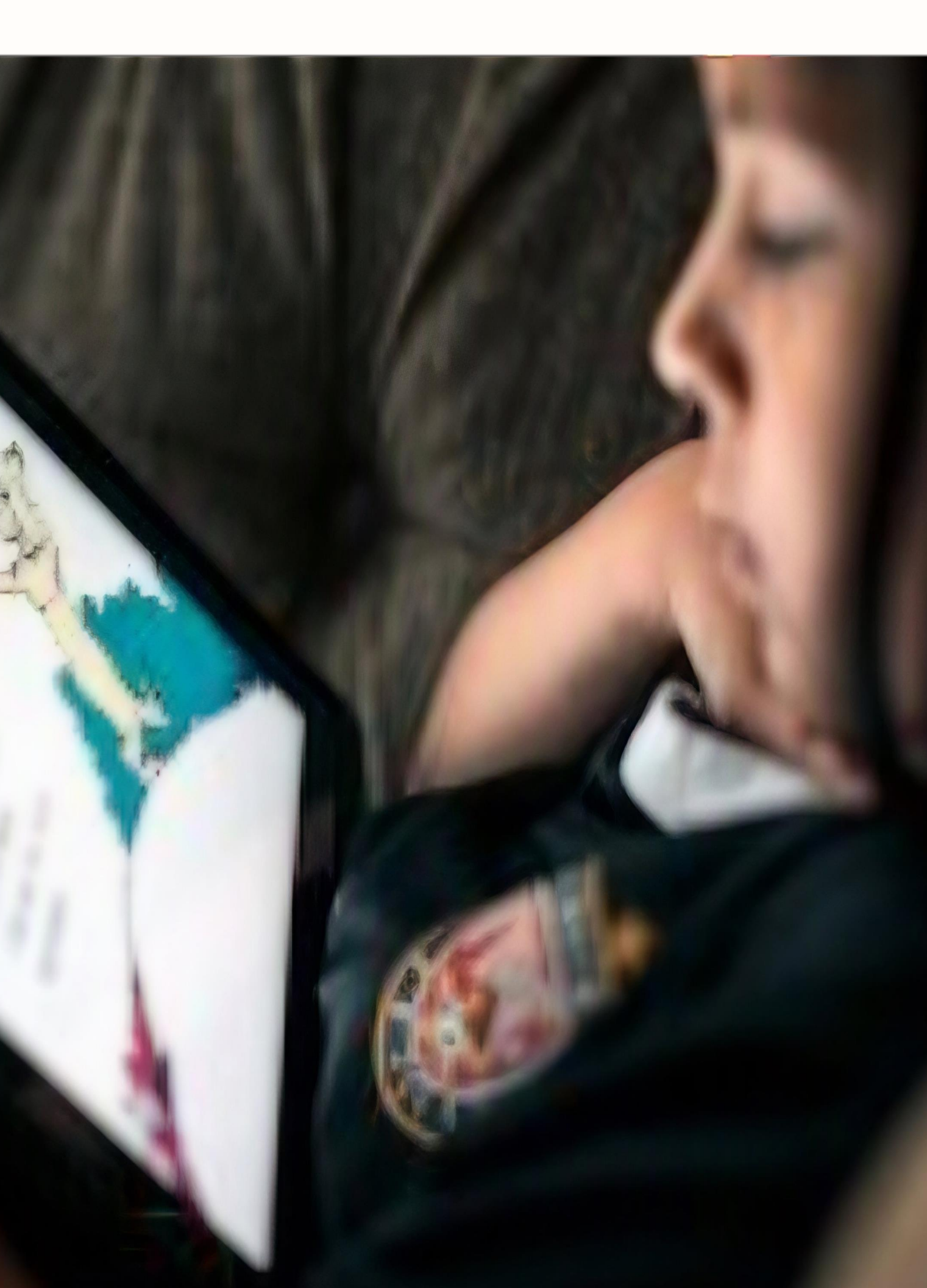
1. Traditional direct instruction: Structured Knowledge Transfer

Best For: Explaining technical regulations, ISO standards, safety protocols, and foundational thermal physics concepts.

Classroom Delivery: Instructor-led presentations combined with visual diagrams and physical material samples.

Implementation Tip: Keep lectures concise (15–20 mins) and immediately follow up with quick comprehension checks or short Q&A sessions.

Role in VET: Builds necessary baseline theory before students enter workshops or job-site simulations.



Teaching methodologies

2. Flipped classroom: Self-Study Meets Hands-on Labs

Pre-Class Stage: Trainees study digital materials (short videos, interactive guides, technical datasheets) on mobile or web.

In-Class Focus: 100% dedicated to practical application—installing insulation, testing airtightness, or discussing site trade-offs. Resolve questions or clarify difficult concepts

Implementation Tip: Use micro-learning modules (5-minute video capsules on thermal bridges or Passivhaus tapes). It is also useful to take tests on the theory.

VET Advantage: Maximizes valuable workshop time for physical skill practice rather than passive listening.



Teaching methodologies

3. Project-Based learning (PBL): Real-World Eco-Construction Projects

Core Concept: Student teams complete an authentic, end-to-end green construction task (e.g., retrofitting a mock-up wall).

Multidisciplinary Integration: Blends blueprint reading, material selection, Life Cycle Assessment (LCA), and installation.

Implementation Tip: Define clear project milestones—Design Phase, Materials Audit, Execution, and Final Blower Door Test.

VET Advantage: Fosters teamwork, problem-solving, and trade coordination as required on actual jobsites.



Teaching methodologies

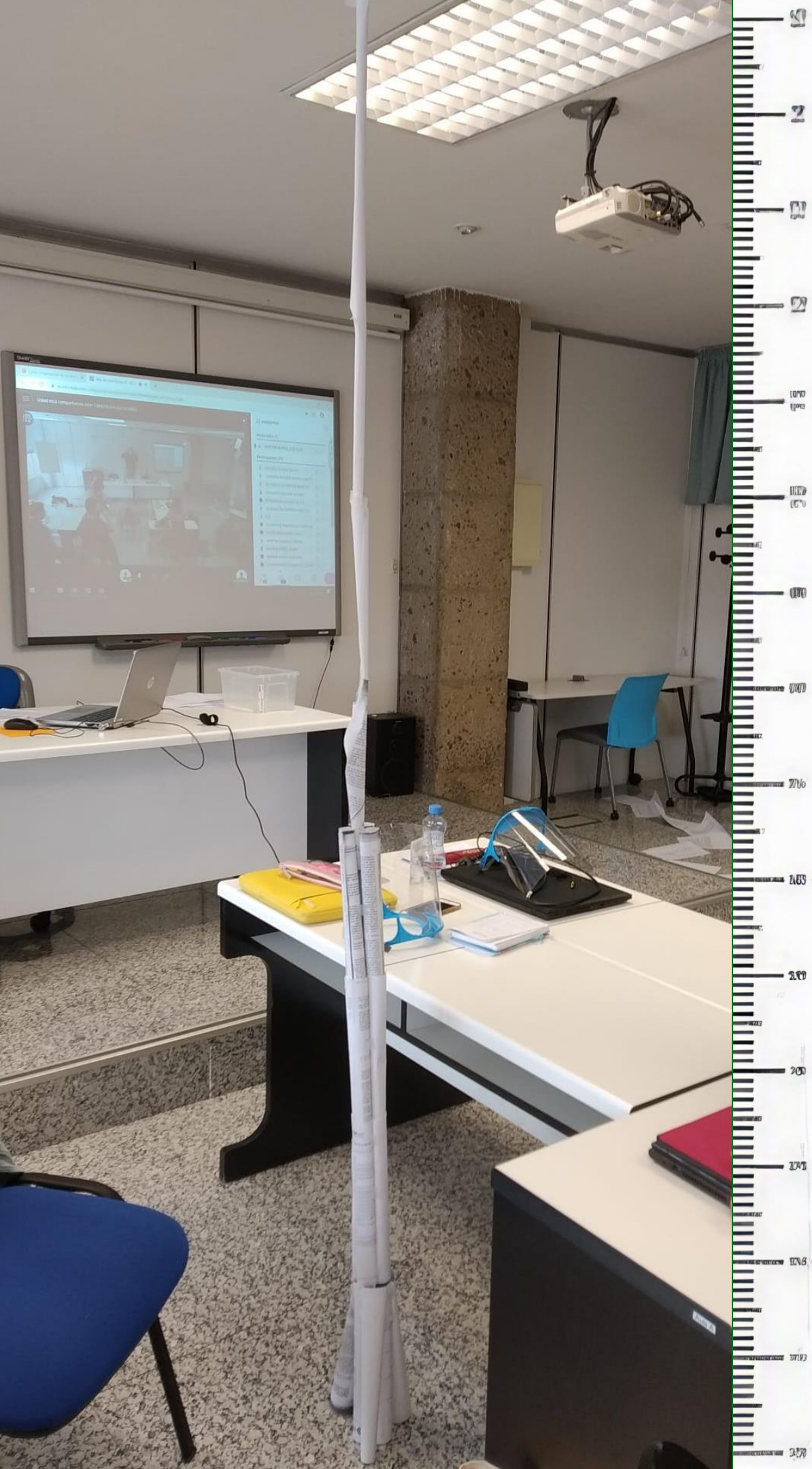
4. Gamified Learning: Site Dilemmas & Interactive Challenges

Challenge-Based Learning: Trainees solve real site emergencies (e.g., "Fix thermal bridge with restricted budget in 2 hours").

Gamification Elements: Point systems, badges, and competitive leaderboard rankings for correct material sorting or eco-audits.

Implementation Tip: Use digital simulation tools or physical escape-room style diagnostic exercises in the training center.

VET Advantage: Boosts motivation and retention among adult learners and entry-level workers.



Who can build the tallest tower?

In this exercise, we are going to practice the project-based learning method (PBL).

Working in groups, you must build the tallest possible tower in 10 minutes, using the following materials:

- Sheets of paper (unlimited)
- A connecting element (public draw)
 - Adhesive tape
 - Paperclips
 - Staple
 - Glue

What would be the best combination of materials? Why?

Designing Practical Activities

	Scenario	Identify the Task	List the Tools and Materials
Components Section	As the main component of the system, it is responsible for the proper functioning of the system. It is a critical part of the system and its failure can lead to the system not working properly.	Identify the components of the system and their functions. List the tools and materials needed to assemble the components.	Identify the components of the system and their functions. List the tools and materials needed to assemble the components.
Purpose Section	The purpose of the system is to provide a reliable and efficient way of performing the task. It is designed to be easy to use and maintain.	Identify the purpose of the system and the tasks it is designed to perform. List the tools and materials needed to achieve the purpose.	Identify the purpose of the system and the tasks it is designed to perform. List the tools and materials needed to achieve the purpose.
Materials and Safety Section	Being a hazardous material, it is important to handle it with care. It is a flammable liquid and should be stored in a cool, dry place.	Identify the materials used in the system and their properties. List the safety precautions that should be taken when handling the materials.	Identify the materials used in the system and their properties. List the safety precautions that should be taken when handling the materials.
Procedure Section	The procedure for assembling the system is as follows: 1. Prepare the components. 2. Assemble the components. 3. Test the system.	Identify the steps in the procedure and the order in which they should be performed. List the tools and materials needed for each step.	Identify the steps in the procedure and the order in which they should be performed. List the tools and materials needed for each step.
Data and Calculations Section	The data collected during the testing of the system is as follows: 1. Temperature: 25°C. 2. Pressure: 1.5 bar. 3. Flow rate: 10 L/min.	Identify the data collected during the testing of the system and the units of measurement. List the calculations that need to be performed.	Identify the data collected during the testing of the system and the units of measurement. List the calculations that need to be performed.
Conclusion	The system was successfully assembled and tested. It is a reliable and efficient way of performing the task.	Summarize the findings of the testing of the system and the conclusions that can be drawn. List the recommendations for future work.	Summarize the findings of the testing of the system and the conclusions that can be drawn. List the recommendations for future work.

- 1. Identify Competency:** Pinpoint exact green skill (e.g., "Applying continuous vapor barrier without leaks").
- 2. Contextualize Scenario:** Set realistic construction constraints (budget, material availability, time limit).
- 3. Define Clear Deliverables:** Specify physical output (installed panel) and technical report or audit sheet.
- 4. Scaffold Learning Steps:** Provide safety briefs, material datasheets, and step-by-step checklists.
- 5. Integrate Self-Correction:** Include intermediate quality checks using diagnostic tools (e.g., smoke pens).

Sample green VET Activities

Mock-up Insulation & Airtightness Audit

Task: Trainees install insulation and sealing tape on a timber frame mock-up, then perform a mini Blower Door Test to detect and seal air leaks.

Outcome: Hands-on mastery of thermal envelope integrity.

Eco-Material Lifecycle Analysis (LCA)

Task: Given a building blueprint, student groups select and justify alternative bio-sourced materials (straw bale, hempcrete, recycled brick) balancing cost, embodied carbon, and performance.

Outcome: Decision-making competency in green sourcing.



Evaluation

Evaluation plays a crucial role in education as it provides valuable insights into the learning process, teaching effectiveness, and educational outcomes.

Key aspects:

1. Measuring Student Learning
2. Improving Teaching Methods
3. Providing Feedback
4. Motivating Students
5. Diagnosing Learning Difficulties
6. Ensuring Equity

RUBRICS

A rubric is a framework that sets out criteria and standards for different levels of performance and describes what performance would look like at each level. Rubrics have often been used in education for grading student work. They identify and evaluate the aspects of a task using pre-established achievement levels.



Assessment and rubrics

Key Components

Assessment Criteria

Specific technical & behavioral skills evaluated (e.g., precision of seal, waste sorting, site safety).

Performance Levels

Clear gradient scales (e.g., 4 Levels: Novice, Apprentice, Proficient, Master Practitioner).

Descriptive Indicators

Explicit, observable descriptions of what actions earn each score level, eliminating evaluator bias.

Weighting Factors

Assigning higher percentage weights to critical safety & energy-performance criteria.

Sample rubrics

Thermal enclosure assembly

Criteria	Needs Improvement (1-2)	Proficient (3)	Mastery (4)
Material Selection & Waste	Inaccurate cutting; excessive waste (>15%); improper sorting of eco-materials.	Correct cutting; low waste (5–10%); sorted materials into appropriate bins.	Optimal material yield; zero avoidable waste (<5%); full recycling compliance.
Airtightness & Taping	Gaps in vapor barrier; unsealed penetration points; air leaks detected in test.	Continuous seal applied; minor tape wrinkles; passes basic airtightness check.	Flawless tape application; 0.6 h ⁻¹ Passivhaus airtightness limit achieved.
Thermal Bridge Avoidance	Insulation gaps left at joints; compression of insulating layers (>20%).	Uniform insulation fitted; proper alignment at corners and frame junctions.	Perfect thermal bridge elimination; Verified with thermal camera inspection.
Safety & Teamwork	PPE missing; non-compliant tool usage; poor communication with team.	Full PPE worn; standard safety protocols followed; good team coordination.	Proactive site safety lead; helps peers; efficient role distribution.



THANK YOU
FOR YOUR ATTENTION

