

Interreg VI – A Italia - Österreich  
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# Workshop

## Template - Bricks with a Past

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**Interreg**  
Italia - Österreich



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**EDU-CIRC**

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#### DOCUMENT APPROVAL

Name	Organization	Role	Action	Date
Alexander Berndt	CUAS	Lead	Approval	16.06.2025

#### DOCUMENT HISTORY

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V1.0	23.06.2025	Initial idea and workshop layout	Gehan Dasanayake
V1.1	25.07.2025	Added 3 different brick types for comparison	Gehan Dasanayake
V1.2	27.07.2025	Updated purchase links	Gehan Dasanayake
V1.3			
V1.4			



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# 1. Introduction

The workshop, "Bricks with a Past," is designed for students. Its central theme revolves around construction and specifically focuses on introducing the concept of Life Cycle Assessment (LCA) through the engaging medium of bricks.

The core idea is to educate participants about the environmental impact of different building materials, using bricks (clay, concrete, recycled plastic) as a practical example. Through a combination of interactive activities, mini-lectures, and a hands-on "Build Challenge," students will explore how material choices affect CO<sub>2</sub> emissions, energy consumption, and water usage across a product's entire lifecycle. The workshop aims to develop critical thinking skills related to sustainable construction, encouraging participants to make informed decisions that balance environmental impact with practical considerations like structural strength and cost. Ultimately, "Bricks with a Past" seeks to foster an understanding of LCA principles and their real-world application in creating a more sustainable future in construction.

## 1.1 Learning Objectives

By the end of the workshop "Bricks with a Past," participants will be able to:

- Understand the concept of Life Cycle Assessment (LCA) and its four key stages.
- Identify and compare the environmental impacts (CO<sub>2</sub> emissions, energy, water use) of different brick types.
- Analyze how material choices affect both sustainability and structural performance.
- Apply LCA thinking to a construction challenge by planning and building a model wall.
- Work effectively in multidisciplinary teams, taking on roles such as engineer, analyst, architect, and presenter.
- Respond to changing conditions (e.g., resource scarcity, policy changes) through adaptive problem-solving.
- Communicate decisions clearly through visual posters and oral presentations, justifying material choices with data.
- Reflect on trade-offs between environmental impact, functionality, and aesthetics in real-world construction contexts.

## 1.2 Required Knowledge

- Basic understanding of environmental concepts: Familiarity with terms like carbon footprint, energy consumption, and recycling would be beneficial.
- General interest in construction or design: An eagerness to learn about how buildings are made and the materials involved.

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- Basic arithmetic skills: The ability to perform simple calculations for the LCA activity (addition, multiplication) is necessary.
- No prior in-depth knowledge of LCA or specific construction techniques is required, as these will be introduced during the workshop. The workshop is designed to be accessible to students with varying backgrounds.

## 2. Workshop Structure

Table 1 Workshop Structure

Phase	Duration	Activities	Purpose	Materials
Opening	15 min	Welcome quiz, introductions	Set tone, engage curiosity, introduce theme	Quiz sheets, visuals/slides
Context Setting	15 min	Explain workshop objectives, short videos on brick manufacturing processes, importance of LCA in construction	Align expectations, establish relevance	Visuals/slides, videos
Main Content	TBD	Material journey, mini lecture on LCA, build challenge, poster creation	Deliver key concepts and apply through practice	Material samples, scorecards, building kits, posters, infographics
Wrap-up	20 min	Team pitches, peer review, reflection worksheets, feedback forms	Consolidate learning and gather feedback	Reflection sheets, review rubrics, feedback forms (paper or digital)

### 2.1 Workshop Agenda

Table 2 Workshop Agenda

Phase	Duration	Activities	Purpose	Materials
Welcome	TBD	Introduction and quiz related with bricks	Engage participants and introduce core concepts	Projector/slides, Quiz sheets
Material Journey Mapping	TBD	Hands-on exploration of brick samples, brick manufacturing process	Understand the origin, production steps	Hands-on material samples (clay, concrete, recycled plastic), slides with videos
Mini Lecture on LCA	TBD	Explore lifecycle stages, interactive talk using infographics on CO <sub>2</sub> e,	Explain how LCA evaluates	Infographic handouts, visual aids, whiteboard/projector

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		energy, and water impacts for each brick type	environmental impact for each brick type	
Build Challenge	TBD	Teams build model walls with material and point constraints	Practice sustainable design under constraints	Mini bricks (3 types), building base, rulers, strength charts, LCA budget sheets
Poster Creation	TBD	Create posters summarizing design choices and LCA rationale	Communication analysis and reflection on decision-making	Poster paper, markers, printouts of material data, stickers/icons for visuals
Pitch, Reflection & Feedback	TBD	Team presentations, reflection worksheet, and individual feedback forms	Present designs, reflect on learning, and provide input to improve future workshops	Reflection worksheets, peer review rubric, printed or digital feedback forms, pens

## 2.2 Required Equipment

Table 3 Required Equipment

Category	Item	Quantity	Purpose	Alternative Options
Technology	Projector & screen	1 set	Present slides, visuals	Display screen
	Laptop	1 unit	Run presentation and access	Tablet with HDMI adapter, shared desktop
	Speakers	1 set	Audio for videos or sound-supported content	Built-in laptop sound, no-audio option
Materials	Mini bricks (painting required: Red, Black, Green )	Mixed pieces from 3 different colors (30x3 for each group)	Hands-on building for the challenge	LEGO-style blocks, foam or cardboard box
	Poster paper	2 sheets per team	Visual presentation of group solutions	Canva, Google Slides, A3 paper
	LCA Scorecards	1 per team	Simulate material comparison and track decisions	Digital spreadsheet, printed chart
	Surprise Event Cards	1 full set (3–5 cards)	Add realism with dynamic constraints during the build phase	Slide-based announcements, pre-written event notes

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Supplies	Markers, pens, pencils	1 set per participant/team	Poster design, LCA calculations, note-taking	Digital tools (e.g. tablets with stylus)
	Scissors, glue, tape	1 set per team	Poster assembly and materials handling	Pre-cut materials, digital poster tools
	Rulers	1 per team	Measure dimension of wall builds	Pre-recorded sample data or estimation guides
	Calculator	1 per team	Perform LCA score calculations for wall builds (cost, strength, impact)	Hand calculations with pen and paper, calculator apps on phones or tablets
Documentation	Handouts (LCA intro, infographic, challenge rules)	1 set per participant	Reference material throughout workshop	QR code linking to digital files, shared folders
	Reflection worksheets	1 per participant	Capture personal learning outcomes	Google Forms, Microsoft Forms
	Peer review rubrics	1 per team	Evaluate and score other teams during the pitch	Digital rubrics, verbal feedback rounds
Other	LCA Lifecycle Posters	2-4 posters around room	Visual reference for the four stages of LCA	Projected slides, hand-drawn whiteboard diagrams
	Full Slide Deck	1 master set (digital)	Guide participants through each phase with visuals and instructions	Available via shared drive or USB

## 2.3 Evaluation Framework

Table 4 Workshop Evaluation

Evaluation Type	Timing	Method	Key Metrics	Follow-up Actions
Immediate	End of workshop	Feedback forms	Satisfaction, objective achievement	Immediate improvements
Short-term	1-2 weeks later	Email survey	Knowledge retention, initial application	Provide additional resources
Long-term	3-6 months later	Interview/survey	Behaviour change, performance impact	Plan follow-up sessions

## 3. Detailed Explanation

### 3. Workshop Layout Explanation

#### 3.1. Welcome

3.1.1. Activity: “What’s in a Brick?” Introduction, quiz.

3.1.2. Description: Participants begin with a fun, interactive quiz to uncover the hidden environmental and material aspects of everyday bricks, setting the stage for the day.

3.1.3. Purpose:

Engage participants, activate prior knowledge, and introduce key sustainability concepts.

Materials: Quiz sheets, projector/slides.

#### 3.2. Material Journey Mapping

3.2.1. Activity: Hands-on Exploration of Brick Materials, Short videos

3.2.2. Description: Students handle real samples of clay, concrete, and recycled plastic bricks to trace their journey through each stage of the lifecycle. Short videos will be used to demonstrate the process of materials in different types of brick.

3.2.3. Purpose: Build understanding of how different materials are sourced, processed, and their impact across the lifecycle.

3.2.4. Materials: Physical samples of bricks (or fragments), Videos.

#### 3.3. Mini Lecture on LCA

3.3.1. Activity: Interactive Talk on Environmental Impact Metrics

3.3.2. Description: Explain about raw material extraction, manufacturing, transport, use, and disposal. Facilitators deliver a short, engaging presentation that breaks down core LCA metrics: carbon emissions (CO<sub>2</sub>e), energy use, strengths and water consumption. Real-world data is used to compare the impact of different brick types, supported by infographics and visual aids.

3.3.3. Purpose: Provide a clear and accessible understanding of how LCA helps measure environmental impact in construction.

3.3.4. Materials: Infographic handouts, projector/slides, whiteboard or visual charts for comparison.

#### 3.4. Build Challenge

3.4.1. Activity: Wall for the Future – LCA Game Challenge

3.4.2. Objective: Teams design and build a model wall (40+ bricks) balancing:

- LCA environmental impact
- Structural strength

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- Aesthetic appeal, plus adaptability with “surprise event” constraints

3.4.3. Brick Types & Metrics

Type	Color	LCA Cost (pts)	Strength
Clay Brick	Red	8	
Concrete Brick	Black	6	
Recycled Plastic Brick	Green	3	

3.4.4. Conditions

- Budget: 150 LCA points
- Minimum structural strength: 80
- Maximum wall length: 30 cm (15 bricks wide) based on brick size (20 mm per brick)
- Strength: 80
- Wall must use at least 40 bricks
- Poster & pitch justification required

3.4.5. Team Roles

- Engineer, LCA Analyst, Architect, Builder, Presenter

3.4.6. Game Flow

- Planning (30 min) – Calculate materials, assign roles, draft wall.
- Construction (30 min) – Build with real bricks; adjust if constraints unmet.
- Poster Prep (20 min) – Summarize impact, material mix, decisions.
- Pitch & Peer Review (15–30 min) – Teams present; peers score designs.

3.4.7. Surprise Event Cards

- “Plastic shortage – max 10 recycled bricks”
- “Recycled subsidy – cost 2 pts per recycled brick”
- “Clay Ban - Clay bricks are unavailable temporarily”

This fosters real-world decision-making and promotes active engagement.

3.4.8. Bonus

- Use all 3 brick types to get 5 bonus points

**3.5. Poster Creation**

3.5.1. Summarize:

- Chosen brick types & number
- Total LCA score

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- Strength score
- Strategy and trade-offs

3.5.2. Peer review using rubric (sustainability, structural logic, creativity)

### 3.6. Pitch, Reflection & Feedback

3.6.1. Activity: Team Presentations, Reflection, and Feedback

3.6.2. Description:

Each team presents their wall design and poster, explaining material choices, LCA strategy, and trade-offs. Peer review is conducted using structured rubric. Participants then complete individual reflection worksheets and feedback forms to evaluate their learning experience and suggest improvements.

3.6.3. Purpose: Share outcomes, reinforce key concepts, and gather valuable insights for future workshop development.

3.6.4. Materials: Team posters, reflection worksheets, peer review rubrics, printed or digital feedback forms, pens.

## 4. Equipment & Purchasing Links

### 4.1. Mini Brick Kit

Buildable construction bricks include windows, doors, and other parts. Ideal for creating varied and detailed model structures.

[Brick Kit 1](#)

[Brick Kit 2](#)

[Brick Kit 3](#)

### 4.2. Lacquer Spray

[Black](#)

[Green](#)

### 4.3. LCA Lifecycle Posters

Classroom visual aids explaining the four stages of Life Cycle Assessment. Great for reference during each activity.

<https://www.daydreameducation.co.uk/life-cycle-assessment-poster>

### 4.4. Sample Bricks

Physical samples of various types of bricks

[Clay Brick](#)

[Concrete Brick](#)

[Eco Plastic Brick 1/Eco Plastic Brick 2](#)