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Circular Mission: Save the Cycle!



BIOS4YOU
AR 2.0

BIO-INSPIRED STEM TOPICS FOR ENGAGING YOUNG GENERATIONS
THANKS TO THE USE OF AUGMENTED REALITY

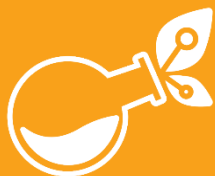
Project Number: KA220-BW-23-30-126516

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Introduction

The purpose of this document is to create guidelines to help the project staff that are dealing with school children, 14-19 aged, to create and re-adapt exercises using Augmented Reality technology.

To this end, a series of templates have been created that define exercises from a methodological, pedagogical and technological point of view.

A good written description, along with images, videos or sketches of the exercise is very important for experts to understand the idea. This will be part of the “General Information” template.

On the other hand, it will be important to define what STEM topic/subject each exercise is intended for and how AR technology can help students or staff or people interested in it when they use these exercises. In addition, people interested in the exercise can understand the usefulness of augmented information, and it will be necessary to explain the benefits.

During the process of defining the augmented information that each exercise will offer, staff working with teachers will be able to develop innovative ideas that make it easier to learn teaching concepts in an easier way.

All students will be able to view the contents explained by professionals projected in the real world in the form of text, 3D model, image, video, sound... This will help them focus their attention on exercise and more easily assimilate the associated concepts.

This document consists of the following points:

- Information about AR technology
- How to define AR exercise thanks to the template:
 - General information
 - Pedagogical specifications
 - Technical specifications



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General information

In this part it will be necessary to report the generic information of the exercise so that it can be recognised.

Name of the exercise:

Circular Mission: Save the Cycle!

Description of the exercises:

The activity uses Augmented Reality to bring each phase of the product's life cycle to life: Raw Materials, Production, Distribution, Use, and End of Life.

Through their mobile devices or tablets, students interact with a virtual guide — Cirko, the Life Cycle Guardian — who presents them with challenges in each phase. Students must choose between multiple options, each with different sustainability outcomes.

Participants:

The activity is designed to be done **individually**, with optional group reflection afterward. Individual participation ensures that each student makes their own decisions throughout the experience, fostering personal responsibility in sustainability thinking.

Group discussions at the end (optional) allow comparison of results and reasoning behind choices, strengthening collaborative learning and peer feedback.

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Participants' age
range:

Minimum age: 17, Maximum age: 19

STEM subject and
specific topic:

The exercise assumes prior basic knowledge of environmental science, climate change, and familiarity with smartphone/tablet use. Students at this age are cognitively ready to engage in abstract thinking, ethical reasoning, and real-world problem-solving.

Gamification
process:

The exercise tackles the challenge of making LCA tangible and relatable. Often, students struggle to understand the complexity and scope of product impact across time and space. AR helps simplify this by showing each step clearly and interactively.

Written or graphic
description of
Augmented info:

Students navigate through each phase of the product's life — from raw materials to disposal — they are faced with choices that carry real environmental consequences. Each decision either earns or deducts “circular energy points”, a dynamic scoring system that reflects their sustainability awareness.

- Animated character (Cirko) who guides students.
- Information overlay: Decision prompts and visual feedback effects (e.g., cycle rings glowing green or cracking).
- Floating 3D choices: Students select sustainable or unsustainable options by tapping icons or objects.
- Static AR environments: Each phase of the life cycle is shown as a themed diorama (e.g., cotton fields, laundry room).
- Bonus interactive hotspots: Hidden facts revealed through interaction.

The AR experience is anchored via image recognition or QR markers, and requires no physical movement — it's designed to be used at a desk or classroom table.

External (or extra)
tools required

Mobile device or tablet with AR capabilities. Internet connection for initial file loading. Printed AR marker sheet (optional) or screen-displayed trigger image.

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Links (video,
images, text online
and so on).

<https://www.ellenmacarthurfoundation.org/>



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CEIPES Eduact



Pedagogical specifications

Here we will collect information on how to use the exercise in the learning session and the results and benefits of using it, from a pedagogical perspective.

How can this augmented information be used to address a STEAM topic in a more interesting way for students?

Describe in detail the use of the AR technology in the session with schoolchildren to address the STEM topic, previously identified as stressful. What is the scope of the Augmented info (sound, picture, video, 3D model...) and what goals are intended to be achieved.

If the exercise consists of several augmented info, describe the use of each of them.

Which pedagogical objectives are addressed through this scenario?

Describe the specific pedagogical objectives that can be reached by using this AR exercise during the session, for a successful and emotional education.

Which results are expected to be reached with its use?

Describe which results are intended to be achieved, that were difficult to achieve through a traditional teaching approach.

For instance, please. explain if and how, with this exercise, the student will learn a specific knowledge, or if maybe he/she will obtain a suitable mindset for STEM knowledge acquisition, or both.



YOU



BRINGING YOUNG GENERATIONS
TO AUGMENTED REALITY

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Which benefits are expected to be reached with its use?

Describe the benefits - that students can take from the use of AR during the session - related to both the disciplinary field and the practical, sensory, and recreational-social level.



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Technical specifications

In this part it is necessary to specify whether the exercise was designed to be implemented with AR technology. This part is fundamental for the translation process. Please include text, audio text and all the necessary materials.

AR INFORMATION

Technology

<https://edu.delightex.com/Studio/Spaces> Marker

If it's needed a
marker, description
of the marker



Hardware

pc, smartphone, tablet, camera.

and software
needed:

Type of Augmented
data

Images; Text; 3D models



Written description of the AR data

Students will begin the experience by scanning a marker or accessing an AR app on their mobile device or tablet. On their screen, the AR character Cirko will appear, inviting them to join a mission to repair the life cycle of a cotton t-shirt.

One by one, students will explore five virtual scenes — from raw materials to end of life — presented through static but immersive AR environments (like a cotton field or laundry room). In each scene, Cirko asks them to make a sustainability-related decision. By tapping on virtual objects or icons, they choose the option they believe has the lowest environmental impact.

Each choice affects their “circular energy” score, and they can discover hidden objects along the way to gain bonus information and points. After completing all five stages, students receive instant feedback and a final title based on their overall impact.

The activity is done individually, but it can end with a class discussion or reflection to compare results and share insights.

If Image



If Text

Life Cycle Assessment

Hey there! I'm Cirko, the guardian of product life cycles! We have a problem: the life cycle of this hat is broken... and without your help, it could end up in a landfill for hundreds of years! Every choice you make can either repair or damage the cycle. Will you help me bring it back to its perfect form? Choose wisely, collect circular energy, and let's see if we can save this hat together! Ready? Then... let's start the circular mission!

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Where should we get the fabric from? Choose the most eco-friendly option!

Organic cotton (no pesticides, less water) - Nop, bad choice -10 points!

Standard cotton (intensive use of water, pesticides) - Nop, bad choice -10 points!

Virgin polyester (derived from petroleum) - Nop, bad choice -15 points!!

Recycled cotton (if unlocked as a secret option) - Great choice, you get +20 points!

“How should we produce this hat? Think about energy and pollution!”

Factory production powered by renewable energy. - Good job, you get +10 points!

Dyeing with non-toxic substances and low water consumption. - Great choice, you get +15 points!

Factory with fossil energy. - Great choice, you get +15 points!

Chemical dyeing and discharge into the river. -Nop, bad choice - 15 points!

Time to ship the hat! What's the cleanest way to deliver it?

Factory production powered by renewable energy. - Good job, you get +10 points!

Factory with fossil energy. - Nop, bad choice -10 points!

Great choice, you get +15 points!

Chemical dyeing and discharge into the river. - Nop, bad choice - 15 points!

3 GENERATIONS
QUALITY

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How should we wear and wash the hat? Small habits, big impact!

Cold wash and air dry - Good job, you get +10 points!

Hot wash and tumble dry - Nop, bad choice -15 points!

Prolonged use (worn many times before washing) - Good choice, you get +10 points!

Worn only twice, then forgotten - Nop, bad choice -10 points!

Recycle Island

The shirt is worn out... now what? Pick the best end for its story.

Recycled in the textile supply chain - Good job, you get +10 points!

Donated or reused (e.g. cloth, craft) - Great, excellent +15 points!

Thrown away in unsorted waste - Bad one, you get -20 points!

Burned as waste - Nop, bad choice -15 points!

If video

-

If audio

-

If 3D model

The formats needed are:.obj,. stl.



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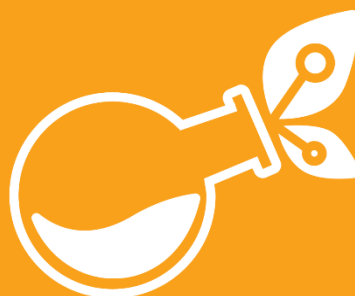
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