



Physical & Augmented Reality for Climate Change Education



Implementation - Cyprus

Pernera Primary School

IEM-Innovative Educational Material

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1st Experimental
Primary School of Pyrgos
Wonder is the seed of knowledge



Penera Primary School

- ▶ 272 students
- ▶ 12 classes
- ▶ 27 teachers

- ▶ Classes participating in the program
(IEM - Innovative Educational Material)
 - ✓ 4th grade - 23 students (2025-26)
 - ✓ 5th grade - 24 students (2025-26)
 - ✓ 6th grade - 18 students (2025-26)

Educational Activity with the Use of Augmented Reality (AR)

The greenhouse effect

Understand the natural phenomenon and distinguishing it from the anthropogenic climate crisis.

Understand how climate change is negatively impacting ecosystems and recognize the most common invasive species in the Mediterranean sea.

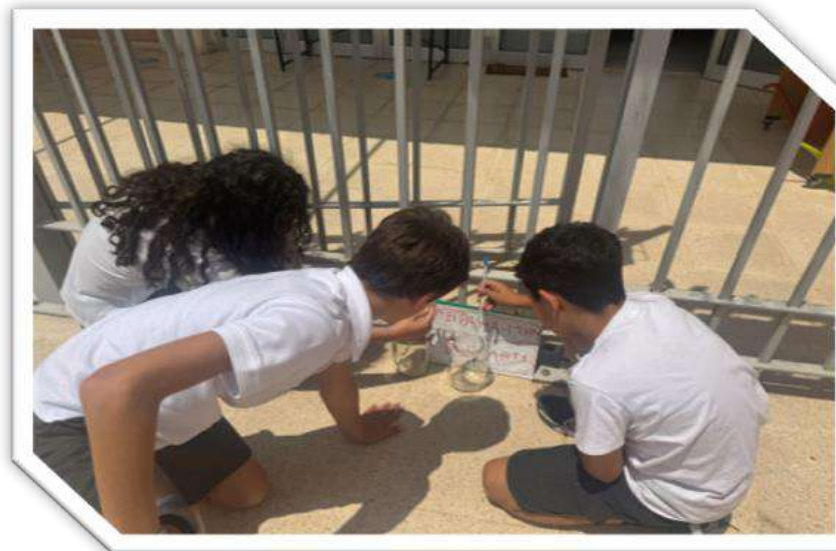
Unwelcome guests: threats to biodiversity and ecosystems

1. The greenhouse effect

The Experiment: "Greenhouse in a Bottle"

Get the information and measurements recorded from last year students (TEM-Traditional Education Material):

- Comparison of the temperature in two bottles, one uncovered and one covered with aluminum foil.



1. The greenhouse effect

Using Augmented Reality (AR)

- Scan QR codes on special posters to see 3D models of the greenhouse and the atmosphere.
- Exploring Earth without greenhouse gases, where the temperature would drop to -18°C .
- Try to create their own AR elements using Blippar.



1. The greenhouse effect

Using Augmented Reality (AR)



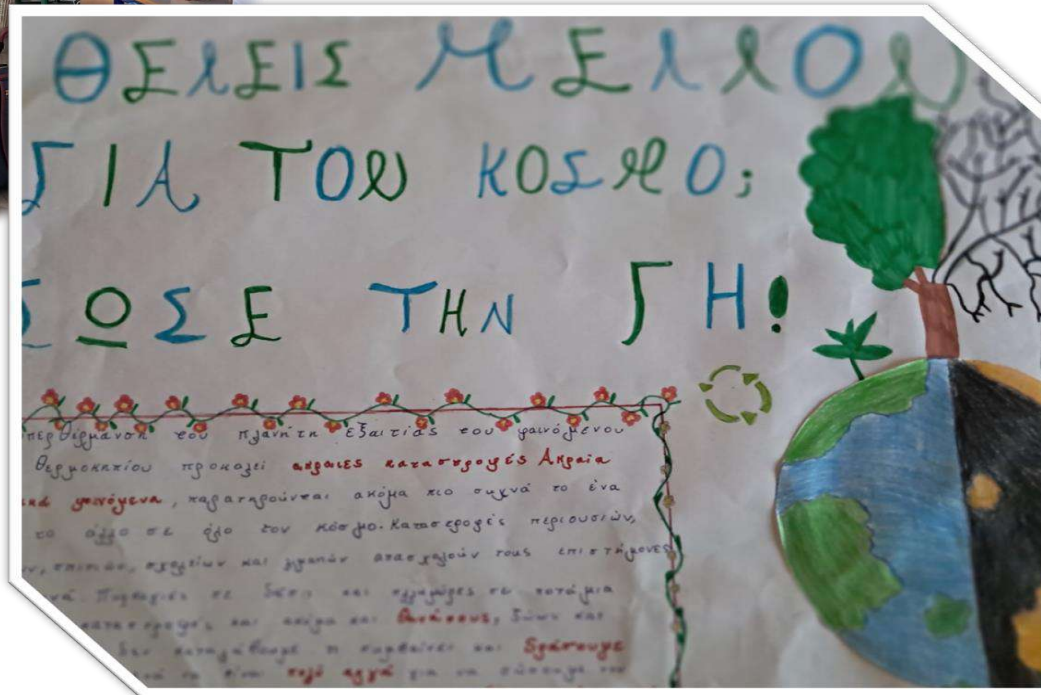
1. The greenhouse effect

Creation of climate action posters - presentations



1. The greenhouse effect

Creation of climate action posters -presentations



2. Unwelcome guests: threats to biodiversity and ecosystems

Activation & Exploration



Exploring Concepts

- View video on alien species and complete Worksheet 1 to understand the vulnerability of the Mediterranean.
- Distinguishing between native, non-native (alien) and invasive species through informative graphs and discussion.



2.Unwelcome guests: threats to biodiversity and ecosystems

Species Identification



Data Analysis

- Using QR codes and the Blippar app to display AR objects representing invasive species of the Mediterranean.
- Study of specific examples, such as the blue crab, the hare and the lionfish, and their connection to rising sea temperatures.

Digital Content Creation: Students design their own AR elements in Blippar to communicate environmental messages.



2. Unwelcome guests: threats to biodiversity and ecosystems

Examples of Invasive Species & Impacts



- **Lagocephalus:**
Extremely toxic, reduces local populations.
Warmer waters enhance its reproduction.

Newspaper articles - Official publishings of the Department of Fisheries and Marine Research



Σχεδόν 145 τόνοι λαγοκέφαλων αλιεύτηκαν από τις κυπριακές θάλασσες κατά την τελευταία διετία, στο πλαίσιο του σχεδίου περιορισμού του ξενικού και επιθετικού είδους ανέφερε στο ΚΥΠΕ η Νικολέττα Βαρνάβα, αρμόδια λειτουργός του Τμήματος Αλιείας. Το εν λόγω σχέδιο έχει διάρκεια μέχρι και τον Δεκέμβριο του 2029, με προϋπολογισμό €1.304.000, εκ των οποίων το 70% χρηματοδοτείται από το Ευρωπαϊκό Ταμείο Θάλασσας, Αλιείας και Υδατοκαλλιέργειας (ΕΤΘΑΥ).



Το ύψος επιδότησης σε 150 περίπου επαγγελματίες ψαράδες είναι βάσει των ποσοτήτων του αλιεύματος των Κύπριων ψαράδων, σύμφωνα με το Τμήμα Αλιείας και Θαλάσσιων Ερευνών

Την ώρα που τα προβλήματα που προκαλεί ο εισβλητικός και τοξικός λαγοκέφαλος στην αλιεία (στην Κύπρο εδώ και 20 χρόνια), απασχολούν έντονα τη δημόσια συζήτηση, λόγω της μεγάλης προβολής που έχει λάβει το τελευταίο διάστημα η επικήρυξη του στις νότιες θάλασσες της Ελλάδας...

Λαγοκέφαλος σε παραλία της Λάρνακας



2. Unwelcome guests: threats to biodiversity and ecosystems

Outdoor Activities

- Learning is completed through the use of the <Actionbound> application, where students participate in a digital "treasure hunt" (Bound) in the physical space, enhancing the experience through practical observation.



Challenges using IEM

1. Technological difficulties: Inadequate equipment - Connectivity issues
2. Teacher training: Lack of digital skills
3. Pedagogical challenges/Curriculum
4. Issues of student participation/Digital divide
5. Organizational difficulties Organizational difficulties

Dealing with difficulties

- Pilot implementation in a small number of classes.
- Training of teachers before the implementation of the Program begins.
- Creation of a technical support team.
- Integration of activities into the learning objectives of the curriculum.



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Project Partners



ISTITUTO COMPRENSIVO
GROSSETO 4



Associated Partners



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