La Scienza in tasca: demo sulla “Purificazione dell’acqua” per il Grade 7 del curriculum di Scienze integrate della Repubblica del Kenya

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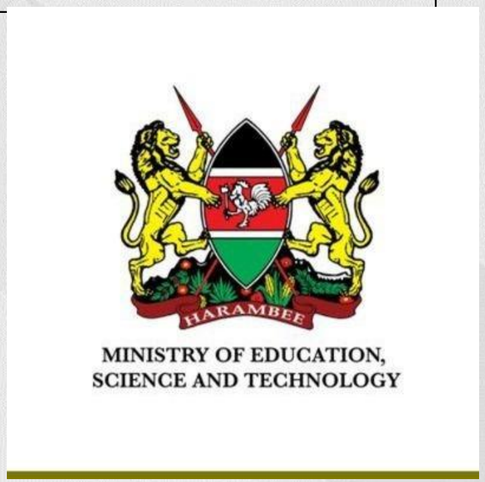


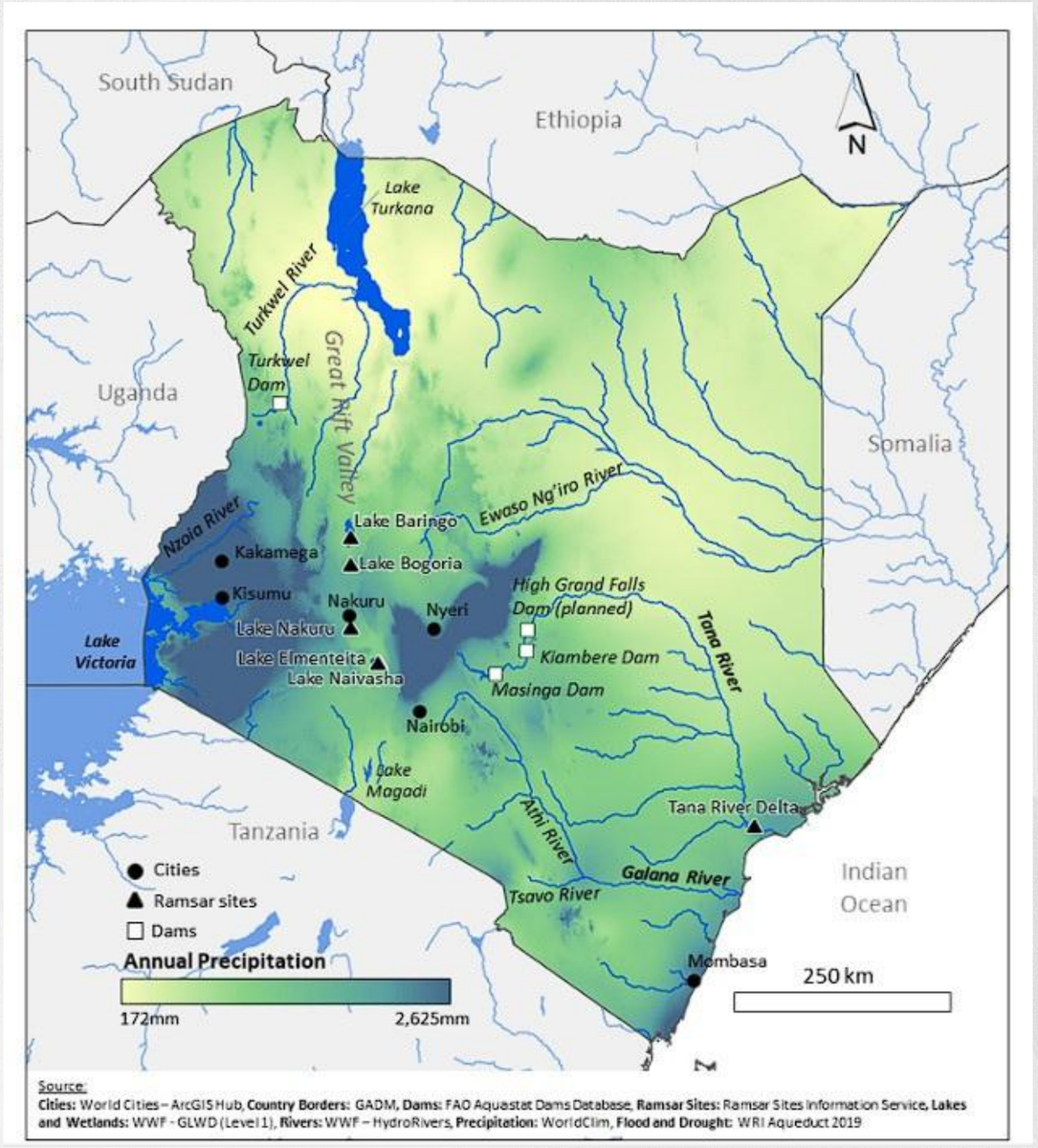
Dal 2007 siamo specialisti di e-learning e Academy online basate su software **open-source** orientate all'accessibilità e alla sovranità digitale europea.

La nostra expertise copre l'intera **infrastruttura digitale**:

- LMS HOSTING MANAGEMENT
- SYSTEM INTEGRATION
- CONSULENZA STRATEGICA
- FORMAZIONE E COACHING
- REALIZZAZIONE CONTENUTI

L'ACCESSO ALL'ACQUA IN KENYA

68% popolazione nazionale ha accesso ad acqua potabile
56% nelle aree rurali
54% deve viaggiare per raccogliere acqua
69% dei raccoglitori sono donne



Fonte: Kenya Demographic and Health Survey 2022

Il contesto educativo keniano

- Competency-Based Curriculum (CBC) dal 2017
- Focus su competenze pratiche e apprendimento esperienziale
- Grade 7: Scienze Integrate come area cruciale

COMMUNITY SERVICE LEARNING (CSL) PROJECT

Project Title: Water Purification

The CSL project is meant to promote care for the family. This has been planned for in the sub strand, Solid – Liquid Mixture separation. The project should enable the learner acquire skills required in water purification. The concept of mixture separation will be assessed during the project as the learner gets an opportunity to practice hands-on activities by applying acquired knowledge and skills in separation of mixtures.

The learner requires guidance and facilitation in order to implement the project. The learner should be taken through proper planning and actualization processes involved in the project activities. The learners should carry out the project in groups where possible, especially when there are limited resources.

Resources Required

The learner needs plastic soda bottle, drinking straw, gravel or small stones, clean sand, charcoal, cotton balls or small cloth or coffee filter, garden dirt, water, scissor, or knife. *The learner should be guided to use or improvise locally available materials for this project.*

Integration of Learning and Community Service

About 70% of the earth is covered with water. However, only about 3% can be used for drinking. Most people around the world do not have access to clean water and must boil or filter it first. One of the mixture separation methods is filtration involving solid liquid mixture. The learner will grasp the concept of filtration by passing dirty water through 2 inch layers of cotton wool, cloth, charcoal, gravel or small stones each in that order from bottom and 4 inch clean sand at the top. Layers of gravel or small stones are used to filter out large sediments like leaves or insects while sand is used to remove

Strand	Sub Strand	Specific Learning Outcomes	Suggested Learning Experiences	Key Inquiry Question
2.0. Mixtures, Elements and Compounds	**2.3. Solid – Liquid Mixture separation (Water Purification).** **CSL Project** (4 Lessons)	by the end of the sub strand the learner should be able to: a) identify nearby sources of water in the community b) categorise water from different sources into clean and dirty water c) identify appropriate materials for separating clean water from solid in the dirty water d) make homemade water filter using locally available materials e) use homemade water filter to separate clean water from solid in the dirty water f) explore sustainable long-term strategies of making river water clean for use	In groups, learners are guided to: • visit the nearby rivers or other sources of water to collect samples of different waters • identify and use appropriate locally available materials to make homemade water filter that can be sued to separate clean water from dirty • demonstrate water filtration using the homemade water filter • brainstorm on appropriate long term sustainable strategies of making river water clean for use within the community • create a portfolio and file the findings from the research. • collect information on human activities that make clean water sources dirty	1. What causes clean river water from the source to become dirty? 2. How can cleanliness of river water from the source be maintained?

		in the community g) carry out research in the community on factors that make communal water dirty h) appreciate the need to sensitize the community on importance of cleanliness of river water	• Search for information in the internet on factors that make clean water dirty with solids • form learning platforms for example in social media, where they communicate to all parents about their findings on human activities and other factors that make river water dirty and how to maintain clean water from the source	

The Key Component of CSL Developed: Science process skills, practical skills and Life skills

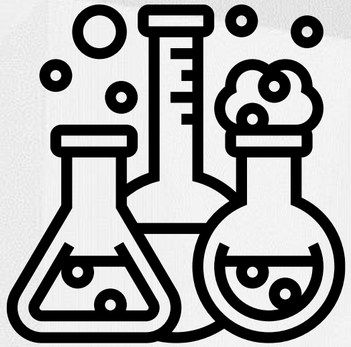
Importance of Basic Science Process Skills in the community

a) The learner will be able to apply measuring skills to identify the quantity of solid particle in dirty water
b) The learner will be able to apply predicting skills to categorise water from different sources into clean and dirty water. The learner can use predicting skills to identify appropriate materials for separating clean water from solid in the dirty water and to explore sustainable long-term strategies of making river water clean for use in the community.
c) The learner will be able to apply observation, recording, inferring and communication skills to observe difference between dirty and clean water, record and sensitise the community on sustainable long-term strategies of making river water clean for use in the community

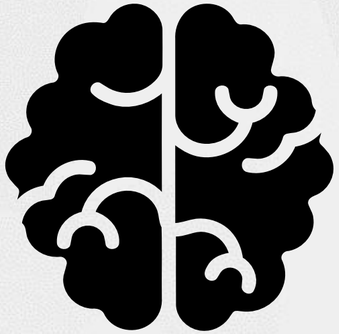
Importance of Practical skills in the community

a) The learner will be able to apply practical skills necessary in making appropriate water filter and manipulate it to filter water depending on the quantity.

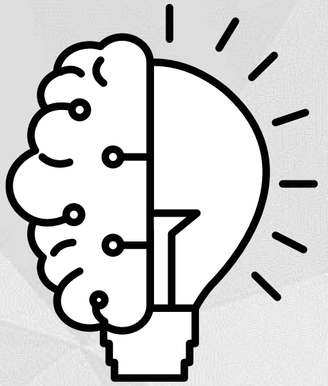
LE SFIDE DELL'INSEGNAMENTO



RISORSE LIMITATE
Accesso limitato a laboratori e materiali consumabili



CARICO COGNITIVO
Teoria + procedure + abilità pratiche simultanee



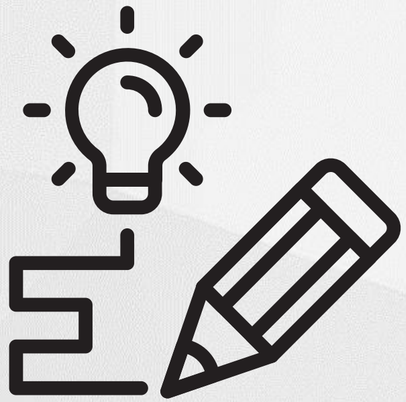
CONNESSIONE REALE
Collegare teoria con pratiche locali concrete

IL FRAMEWORK PEDAGOGICO

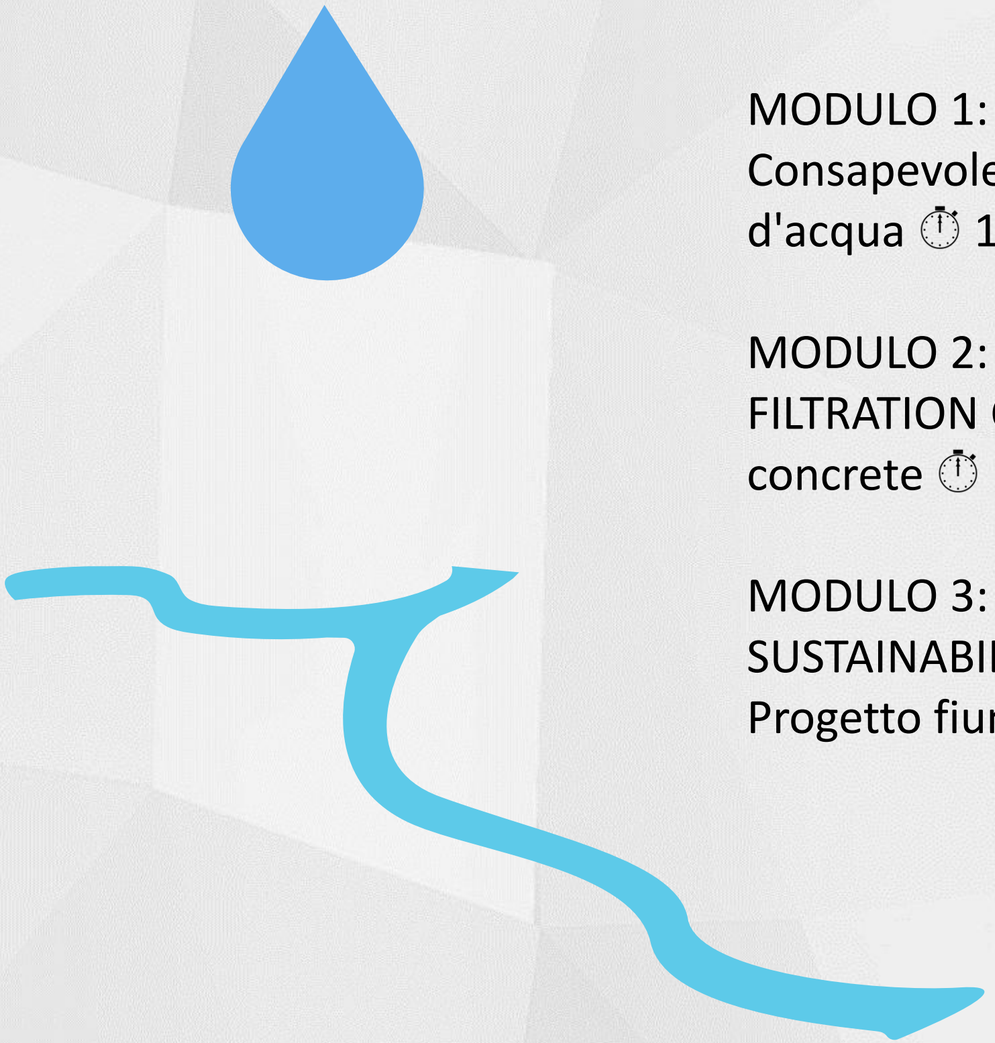
Interfaccia intuitiva
Contenuti segmentati
Riduzione carico cognitivo

Simulazioni H5P
Pratica sicura
Feedback immediato

Project Based Learning
Contesti realistici
Collaborazione



STRUTTURA IN 3 MODULI PROGRESSIVI



MODULO 1: INTRODUCTION
Consapevolezza e identificazione fonti d'acqua ⏱️ 1-2 ore

MODULO 2: WATER PURIFICATION & FILTRATION Competenze tecniche concrete ⏱️ 1-2 ore

MODULO 3: CLEAN WATER SUSTAINABILITY Applicazione reale: Progetto fiume Ngong ⏱️ 1-2 ore

Moodle Home Dashboard I miei corsi Amministrazione del sito 25 SR Modalità modifica

Water Purification (CSL) Project

Apri il cassetto del blocco

Corso Impostazioni Partecipanti Valutazioni Report Altro

- **Introduction**
  - Exploring Village Water Sources
  - Game activity: Find resources to ...
- **Water Purification and Filtration**
  - Purification of water: Methods
  - Water Filter: A Simple Experimen...
- **Clean water Sustainability**
  - Project-Based Learning: Instructi...
  - Video: The Ngong River
  - Project booklet
  - Submission space

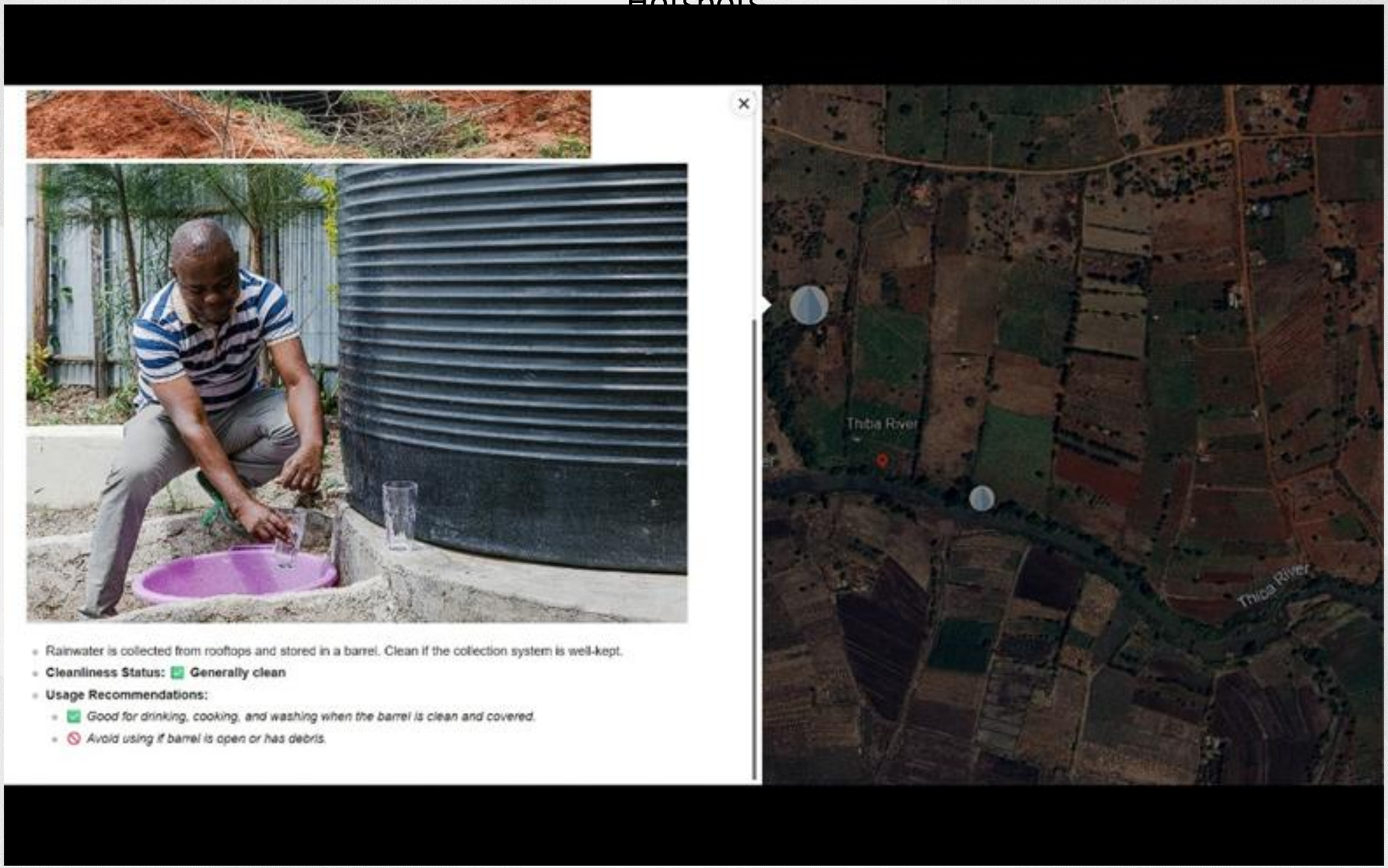
Introduction

Minimizza tutto

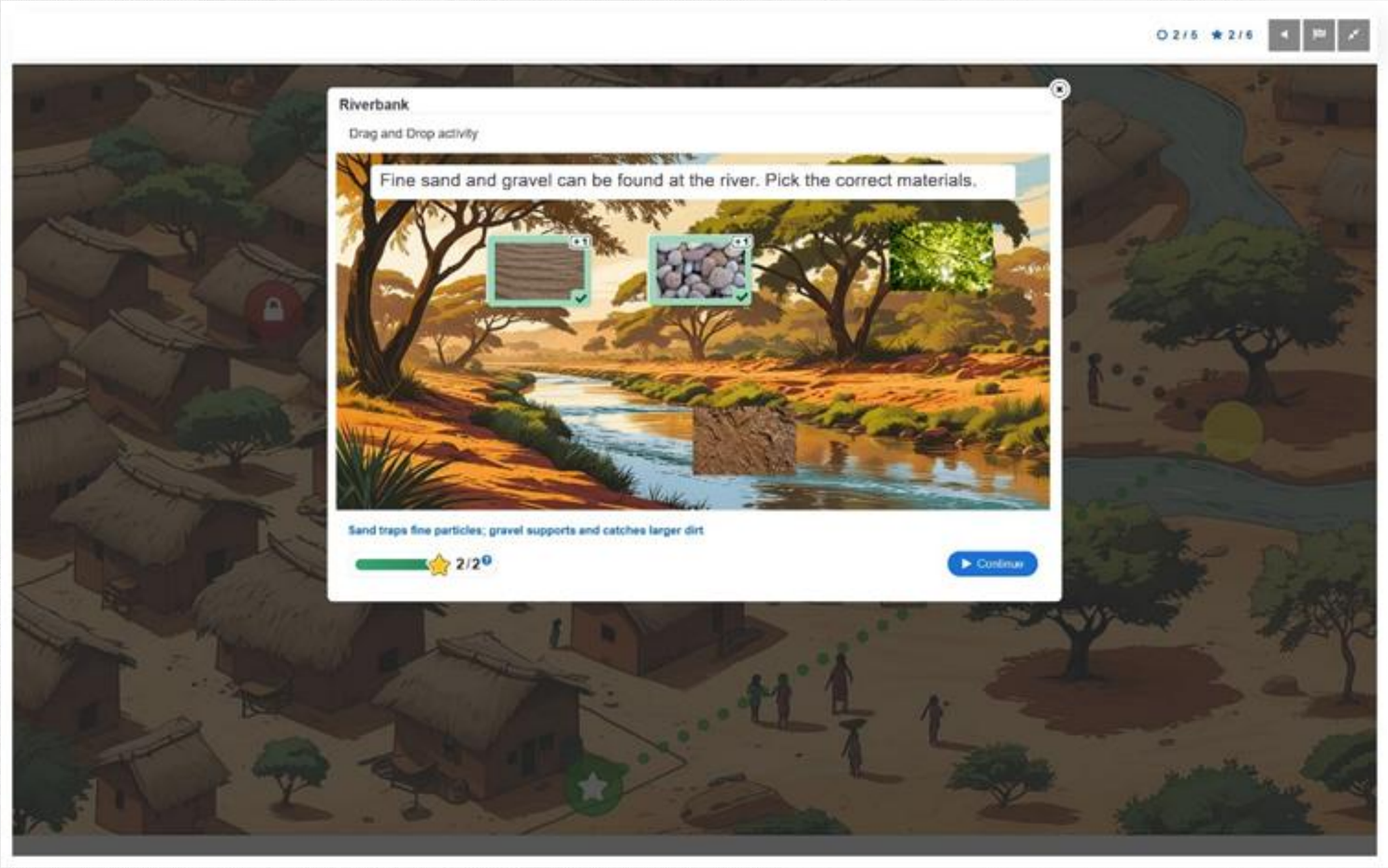
Welcome to this demo course on Water Purification and Water Filters.

Access to clean and safe drinking water is essential for health, hygiene, and well-being. In many parts of the world, however, water sources are contaminated with bacteria, viruses, chemicals, or sediments that pose serious

MODULO 1: EXPLORING VILLAGE WATER SOURCES Attività H5P - Image Hotspots



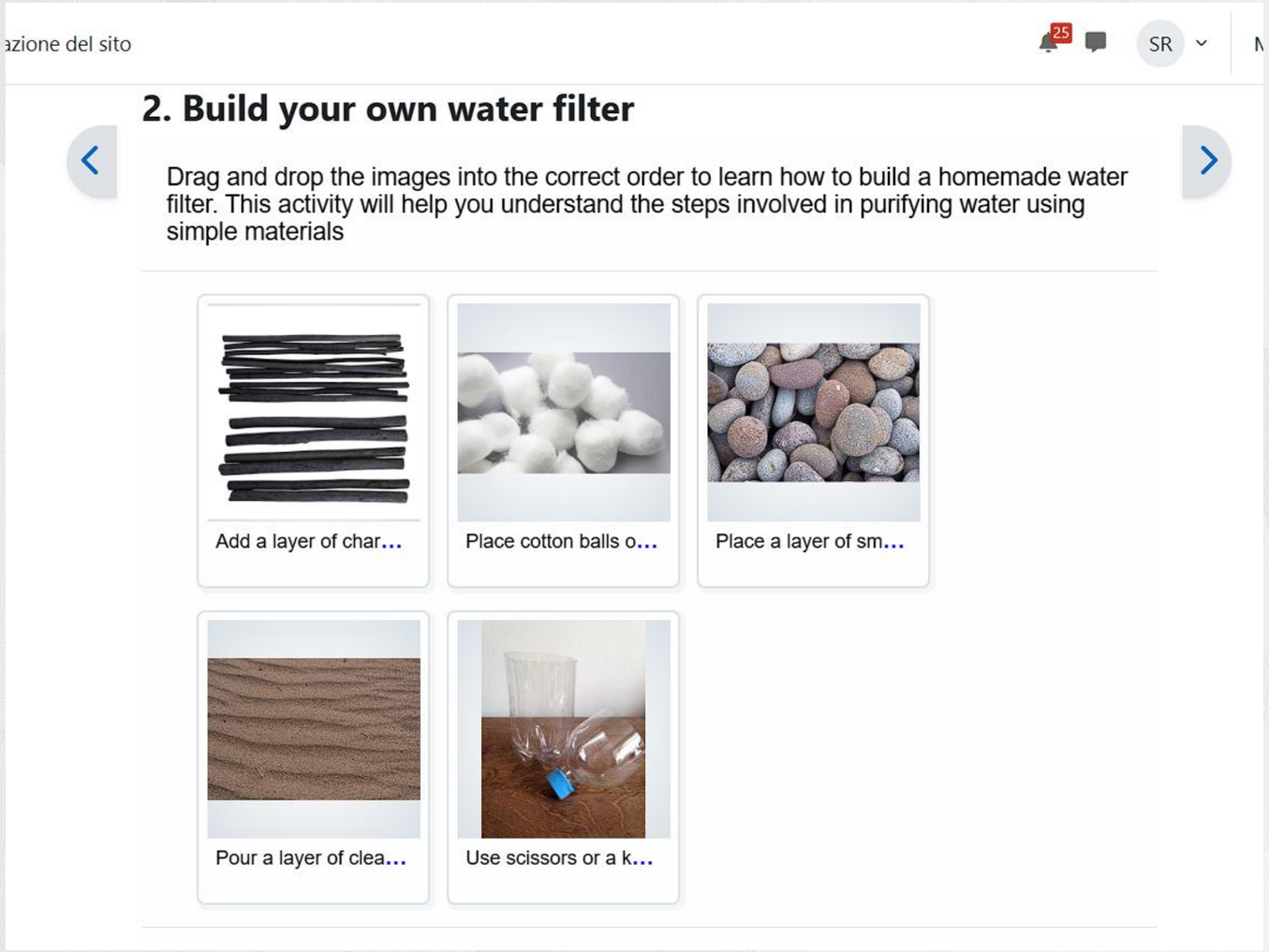
MODULO 1: GAME ACTIVITY



FIND RESOURCES TO BUILD YOUR WATER FILTER

✓ Esplorazione attiva
✓ Raccolta materiali naturali e manufatti
✓ Comprensione funzione di ogni componente

MODULO 2: INTERACTIVE BOOK & PRACTICAL GUIDE



→ Video istruttivi integrati
→ Esercizi pratici H5P incorporati
→ Guida step-by-step per costruire filtri
→ Materiali accessibili e locali
→ Progressione autonoma dello studente

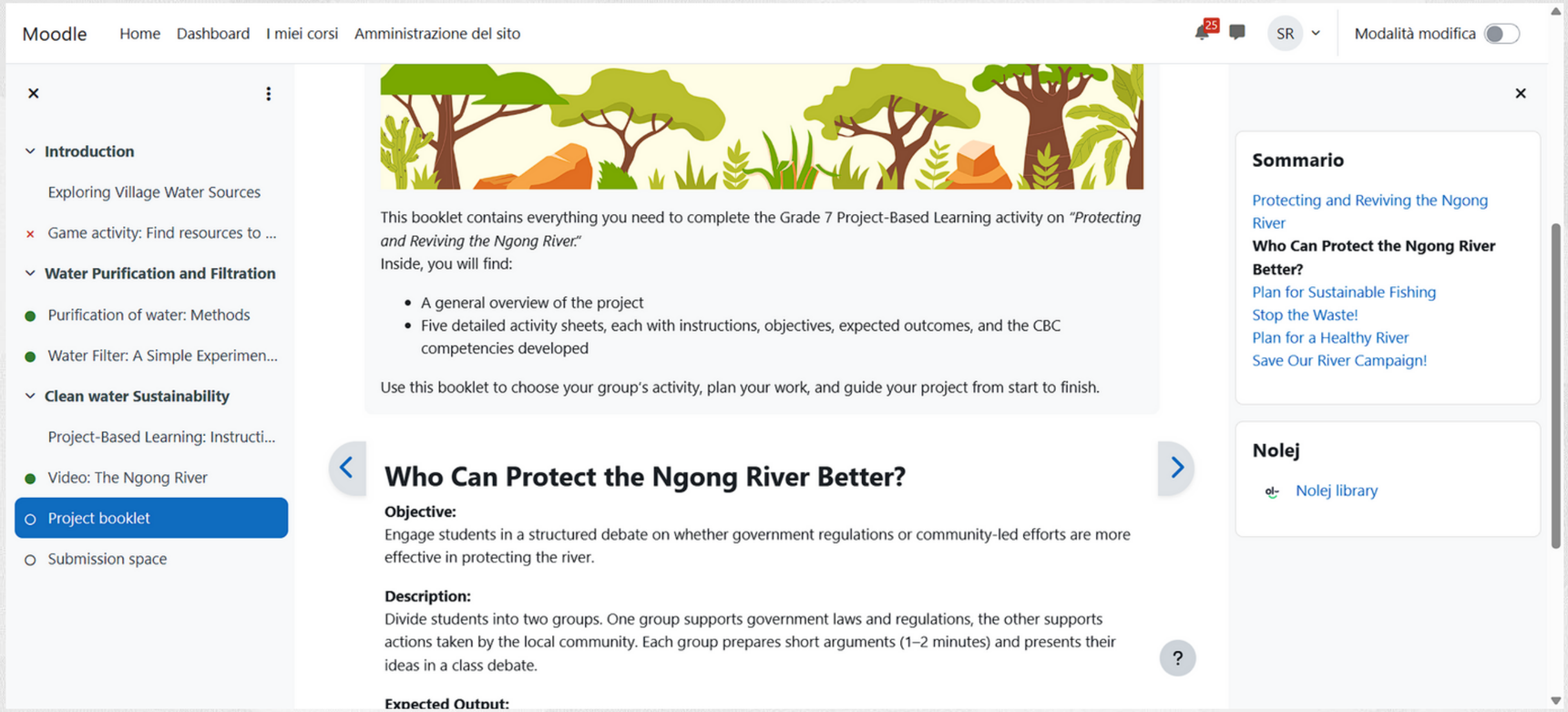
MODULO 3: PROJECT BASED LEARNING

Clean water Sustainability

Welcome to the Project-Based Learning section of this course!

This space is designed to guide you through a collaborative assignment focused on protecting and reviving the Ngong River. In this section, you will find:

- A **video** to help you learn more about the Ngong River and the environmental issues affecting it
- A **project booklet** with the general description of the assignment and individual activity options
- A **submission space** where you will upload your final work



1. MINI-DIBATTITO Dialogo strutturato su problematiche
2. PESCA SOSTENIBILE Proposta per pratiche responsabili
3. ANTI-DUMPING Soluzioni contro inquinamento
4. PIANO DI RIGENERAZIONE Strategia di recupero ambientale
5. CAMPAGNA SENSIBILIZZAZIONE Comunicazione alla comunità

L'APPROCCIO MULTICULTURALE

CONTESTUALIZZAZIONE CULTURALE

✓ Fonti d'acqua realistiche (pozzi, fiumi, raccolta piovana)

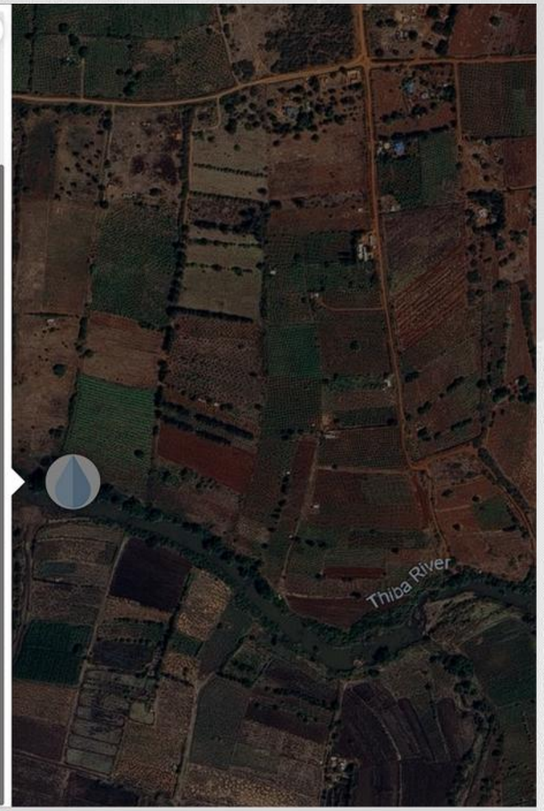
✓ Caso studio locale autentico (fiume Ngong)

✓ Immagini e rappresentazioni della popolazione keniana

✓ Materiali accessibili nel contesto locale

✓ Valorizzazione delle conoscenze e pratiche locali

- **Description:** This river flows through the village and is used by people and animals. It may carry dirt, waste, or germs from upstream.
- **Cleanliness Status:** ❌ **Needs treatment**
- **Usage Recommendations:**
  - 🚫 *Not safe for drinking or cooking unless boiled or filtered.*
  - ✅ *Can be used for washing clothes or bathing with caution.*



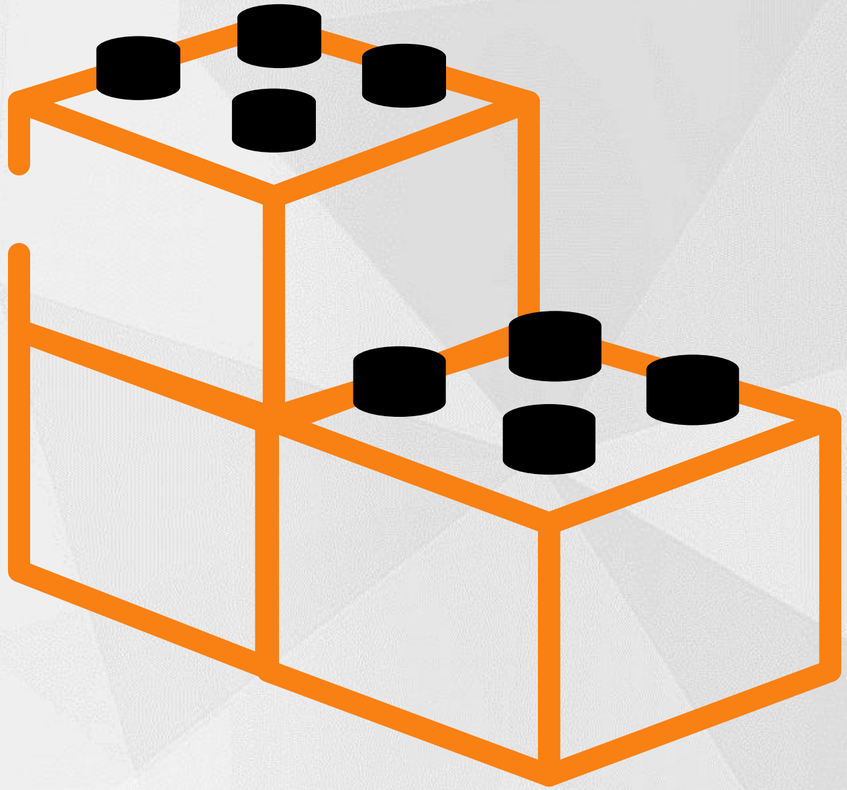
RIUSABILITÀ E REPLICAZIONE

CARATTERISTICHE TECNICHE:

- Moduli con obiettivi chiari
- Contenuti H5P esportabili
- Struttura modulare indipendente

ADATTAMENTO POSSIBILE A:

- Contesti geografici diversi (sostituire riferimenti locali)
- Livelli scolastici differenti (semplificare/approfondire)
- Altri temi scientifici (mantenere framework pedagogico)



CONCLUSIONI E PROSSIMI PASSI

- Modalità offline per contesti con connettività limitata
- Estensione ad altri temi del curriculum CBC
- Comunità di pratica per educatori

Restiamo in contatto

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