

# EDUCATION FOR SUSTAINABLE DEVELOPMENT: EXPERIENCES OF ESCOLA SUPERIOR DE EDUCAÇÃO JOÃO DE DEUS WITHIN THE ECO-SCHOOL PROGRAM

INTERNATIONAL CONFERENCE OF FEE ECO-CAMPUS



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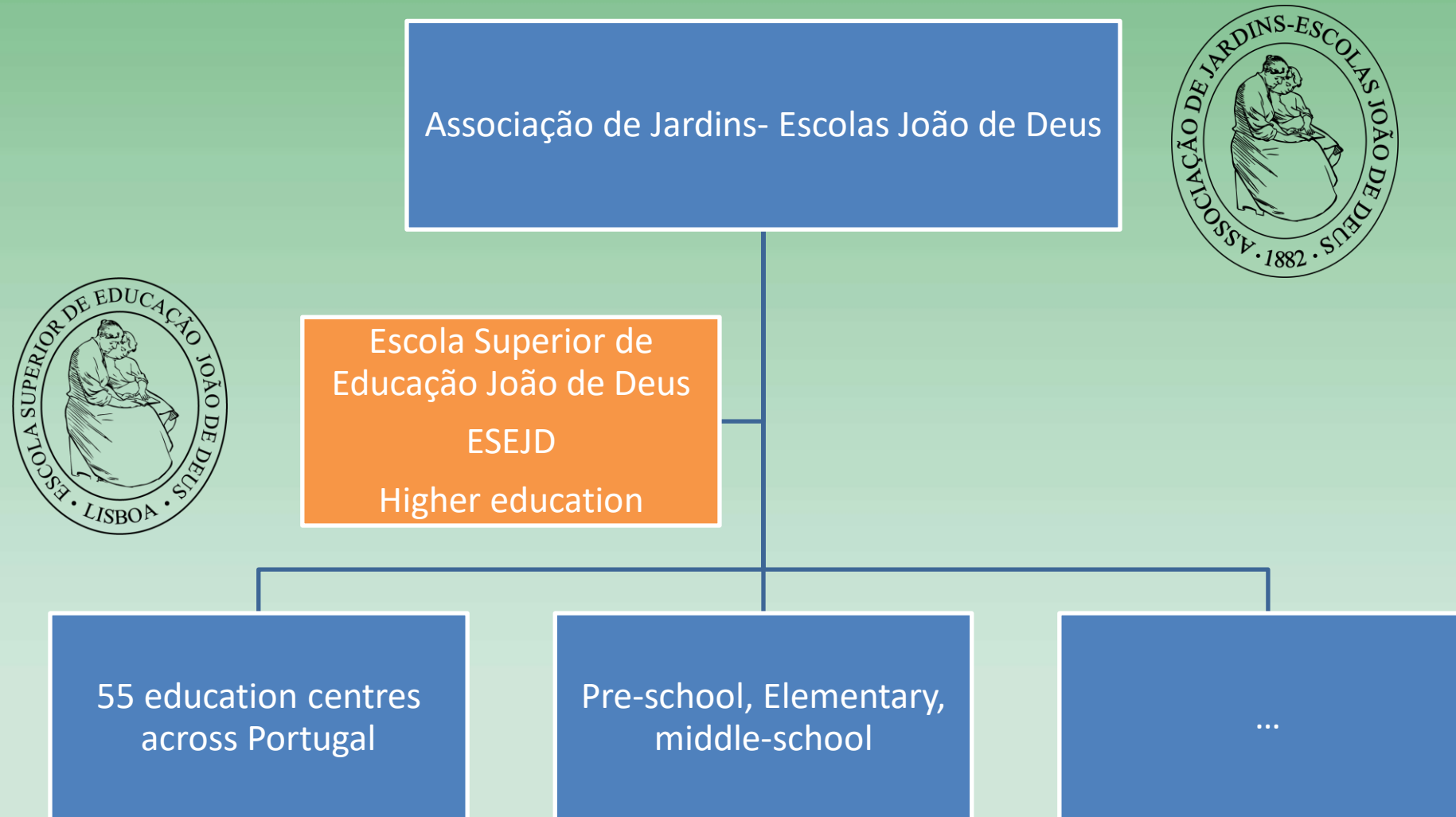


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# Introduction



Education for Sustainable Development (ESD), recognized by UNESCO as a fundamental tool for advancing the Sustainable Development Goals (SDGs), is also crucial for empowering individuals to become agents of change towards sustainability.





# Sustainability research by ESEJD members



Article

## Promoting Sustainable Fish Consumption in Portuguese 4th-Grade Students

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**Abstract:** Consuming fish sustainably means consuming less and better, considering environmental, social, and economic impacts. This demands more knowledge to make informed decisions. In this study, the main goal was to understand how environmental sustainability education can be used as a tool to increase the knowledge and promote sustainable behaviour and consumption habits of 4th-grade students. The COVID-19 pandemic forced the use of two different learning methods, face-to-face and online learning, leading to two different groups of students, and we attempted to measure if the mode of implementing the activities affected the knowledge of the students. A sequential explanatory mixed methodology was applied with a pre-test/post-test design combined with focus group interviews. Between the pre- and post-tests, three activities modules were performed. The results showed that the students were unaware of many aspects related to sustainable fish consumption, but the developed activities significantly increased their knowledge of

 frontiers  
in Marine Science

ORIGINAL RESEARCH  
published: 28 September 2021  
doi: 10.3389/fmars.2021.675278



## Promoting Ocean Literacy in Elementary School Students Through Investigation Activities and Citizen Science

Diana Boaventura<sup>1,2\*</sup>, Ana Teresa Neves<sup>1,3</sup>, Jalme Santos<sup>1</sup>, Paula Colares Pereira<sup>1</sup>, Cristina Luis<sup>4,5</sup>, António Monteiro<sup>4</sup>, Alexandra Cartaxana<sup>4,6</sup>, Stephen John Hawkins<sup>7,8,9</sup>, Maria Filomena Caldeira<sup>1</sup> and António Ponces de Carvalho<sup>1</sup>

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OPEN ACCESS

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# OUR VISION

Equipping citizens with the requisite knowledge, skills, values, and attitudes is essential for fostering their active participation in sustainable development endeavors and understanding the intricate interplay between environmental, social, and economic domains.



This study examines the institution's commitment to sustainability focusing on the experiences of Escola Superior de Educação João de Deus (ESEJD) over the past four years within the Eco-School program.

# OUR MISSION

ESEJD has undertaken diverse actions across various domains, having received green school accreditation.

## **Mission 01**

Waste management

## **Mission 02**

Energy efficiency

## **Mission 03**

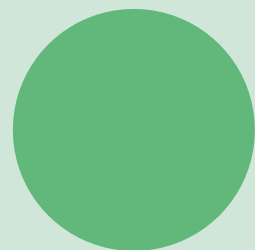
Water conservation

## **Mission 04**

Biodiversity preservation

## **Mission 05**

Climate change mitigation



# Waste management





*1st year  
Installation of waste equipment in all rooms and spaces of ESEJD*

*Waste*

*Escola Superior de Educação João de Deus (ESEJD)*







Video of the Guardians of the Planet published on ESEJD's social media and on the UNESCO schools network.

<https://www.facebook.com/esejoaodedeus/videos/2504164109892950/>



*2nd year*

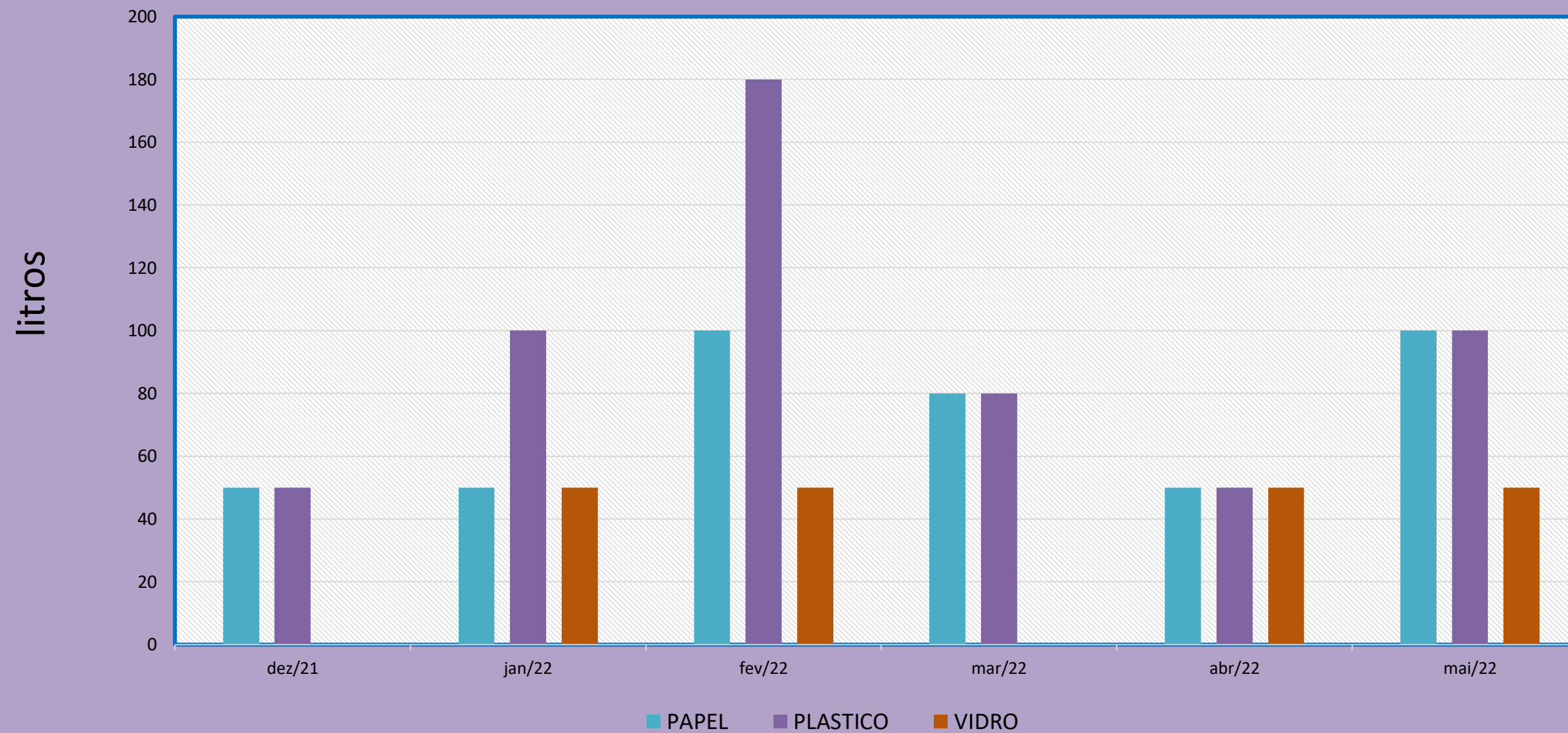
*Several activities were carried out by different classes related to waste signage at ESEJD, monitoring, and awareness for its proper management.*

*Tema: RESÍDUOS*

**ESEJD**



## Escola Superior de Educação João de Deus Waste monitoring data 2021/2022



*3rd year  
Monitoring waste separation.*

**ESEJD 2021/2022**





*4th year*

*After prior training at ESEJD by members of the Lisbon City Council, first-year students of the Bachelor's Degree in Basic Education at Escola Superior de Educação João de Deus participated in the EPIS Volunteers Meeting 2023 at Monsanto Forest Park (on May 31). Our students were responsible for cleaning actions and controlling invasive species using the stem peeling technique.*

*Waste management and Biodiversity (control of invasive species)*

***Escola Superior de Educação João de Deus 2022/2023***

# Energy efficiency



Registo Mensal de consumos:

água **eletricidade** gás

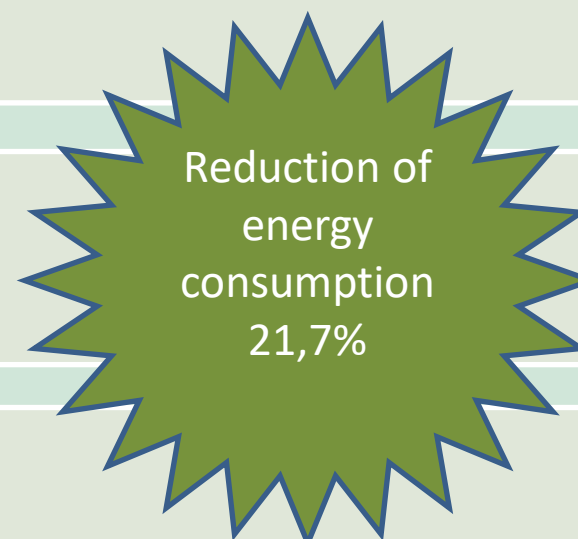
	Data:	Registo (kWh):	Nome do contador:	
1	10/09/2020	445148,00	Cheias	+
2	21/09/2020	446476,00	Cheias	+ -
3	26/10/2020	450691,00	Cheias	+ -
4	10/11/2020	452759,00	Cheias	+ -
5	17/11/2020	453986,00	Cheias	+ -
6	29/12/2020	460644,00	Cheias	+ -
7	04/01/2021	461259,00	Cheias	+ -
8	12/01/2021	464203,00	Cheias	+ -
9	11/02/2021	469924,00	Cheias	+ -
	Data:	Registo (kWh):	Nome do contador:	

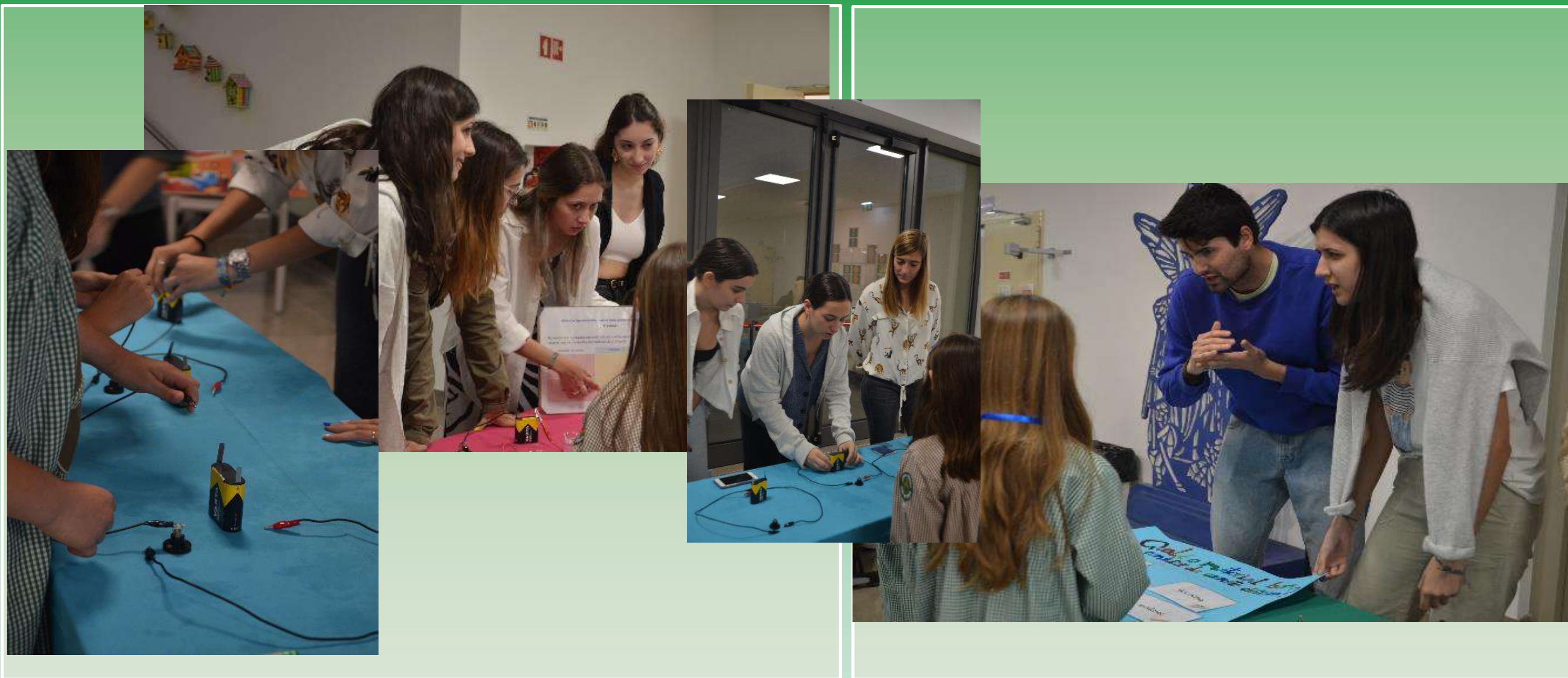


*1<sup>st</sup> and 2<sup>nd</sup> year –Several activities were carried out by students of different classes related to energy signage at ESEJD, monitoring of consumption, and awareness for saving this resource. Led lamps installation.*

**Tema: ENERGY**

**ESEJD**





*3rd year*

*Science Fair "Scientist in Sight... Electricity, Energy, and Sustainability" took place at Jardim-Escola João de Deus de Belas, promoted within the scope of a pedagogical and scientific project of Escola Superior de Educação João de Deus (ESEJD). In this event, students from Escola Superior de Educação João de Deus conducted experimental activities for all students from the primary and middle school, where in-service teachers and parents were also present.*

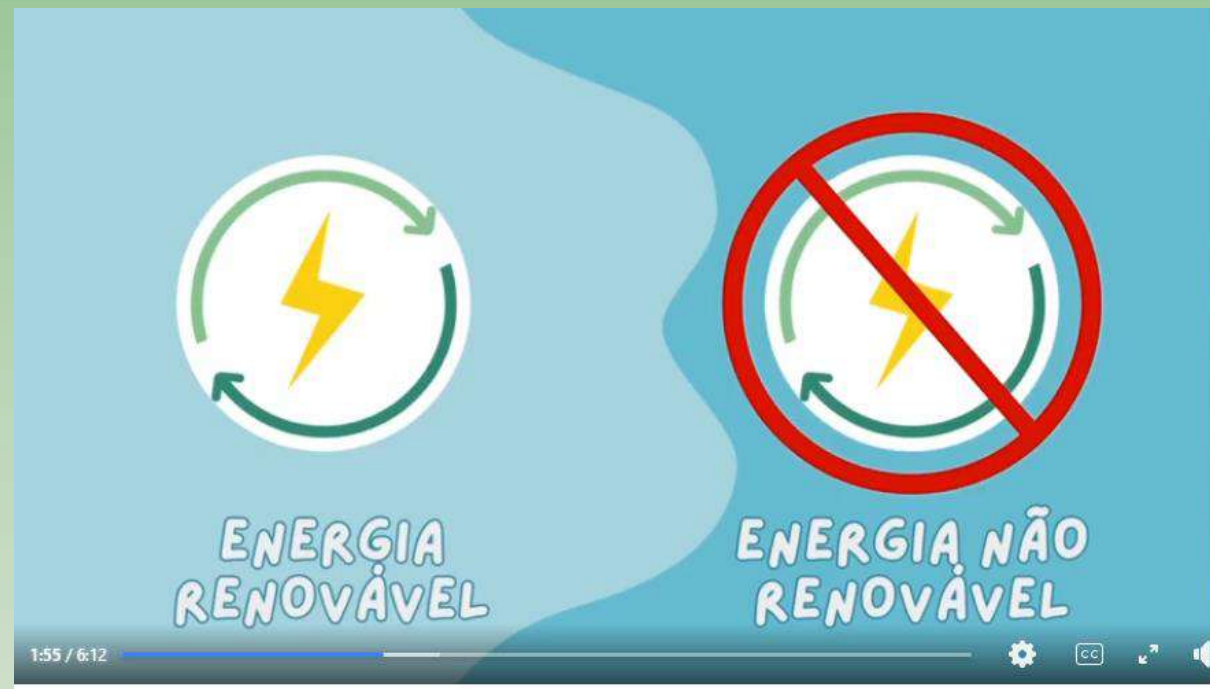
*Energy*

***Escola Superior de Educação João de Deus 2022/2023***

<https://www.facebook.com/esejoaodeus/videos/3522390628027630>



<https://www.facebook.com/esejoaodedeus/videos/3522390628027630>



*Celebration of the National Energy Day, which aims to raise awareness and motivate people, especially the younger generation, about the urgent need to develop efficient energy-saving strategies. The 2nd-year students of LEB created awareness videos on this topic.*

Energy

**Escola Superior de Educação João de Deus 2021/2022**



# Water conservation





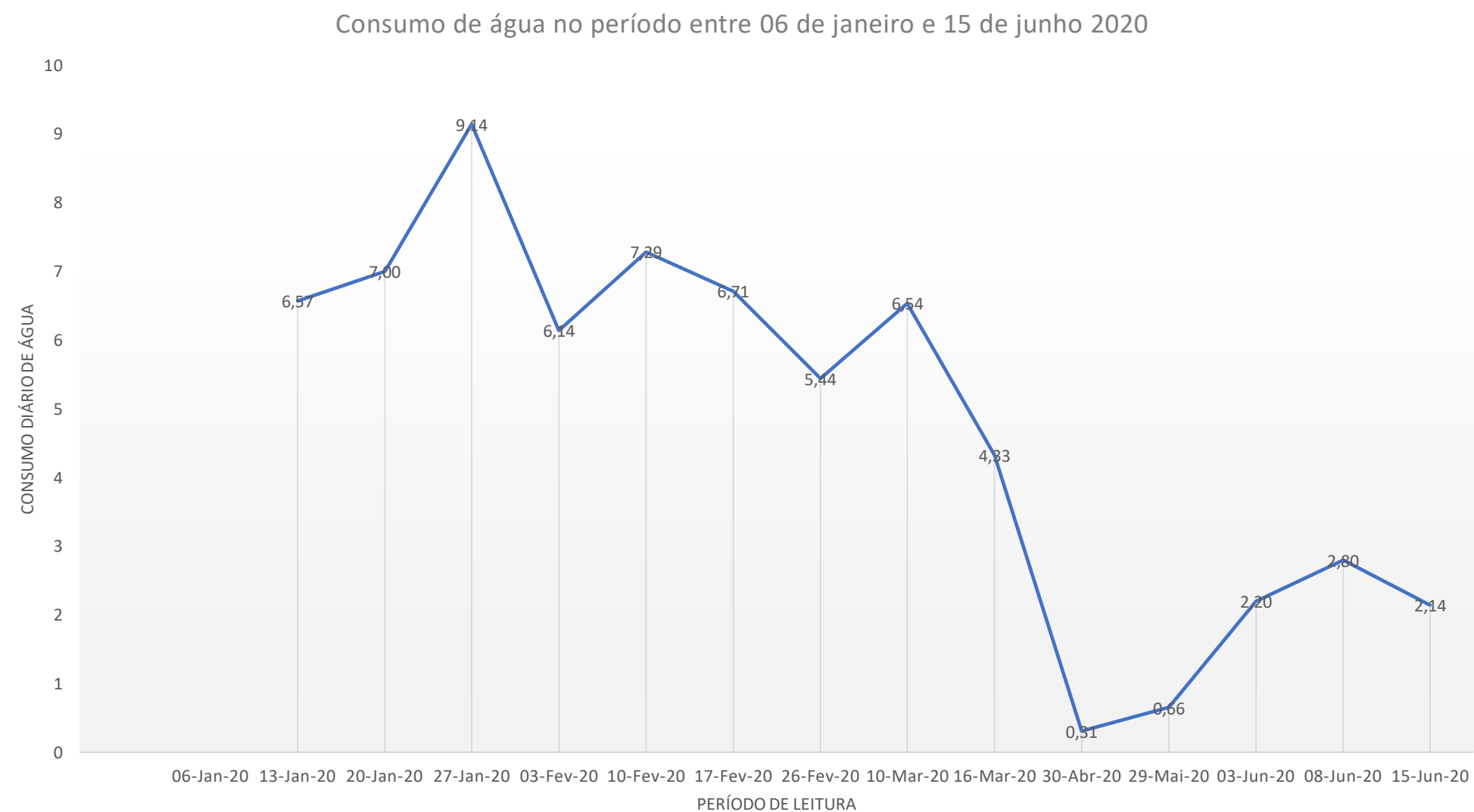
*1st year  
Project ECH2O-WATER in collaboration with the Portuguese  
Association of Water Resources (APRH)*

- Audit at ESEJD*
- Installation of reducers on all faucets*
- Lecture and provision of water bottles*

*Water*

***Escola Superior de Educação João de Deus (ESEJD)***





*1st year*

*This chart aims to understand the behavior of water consumption variation for future, more economical water consumption solutions at ESEJD.*

*Water monitoring*

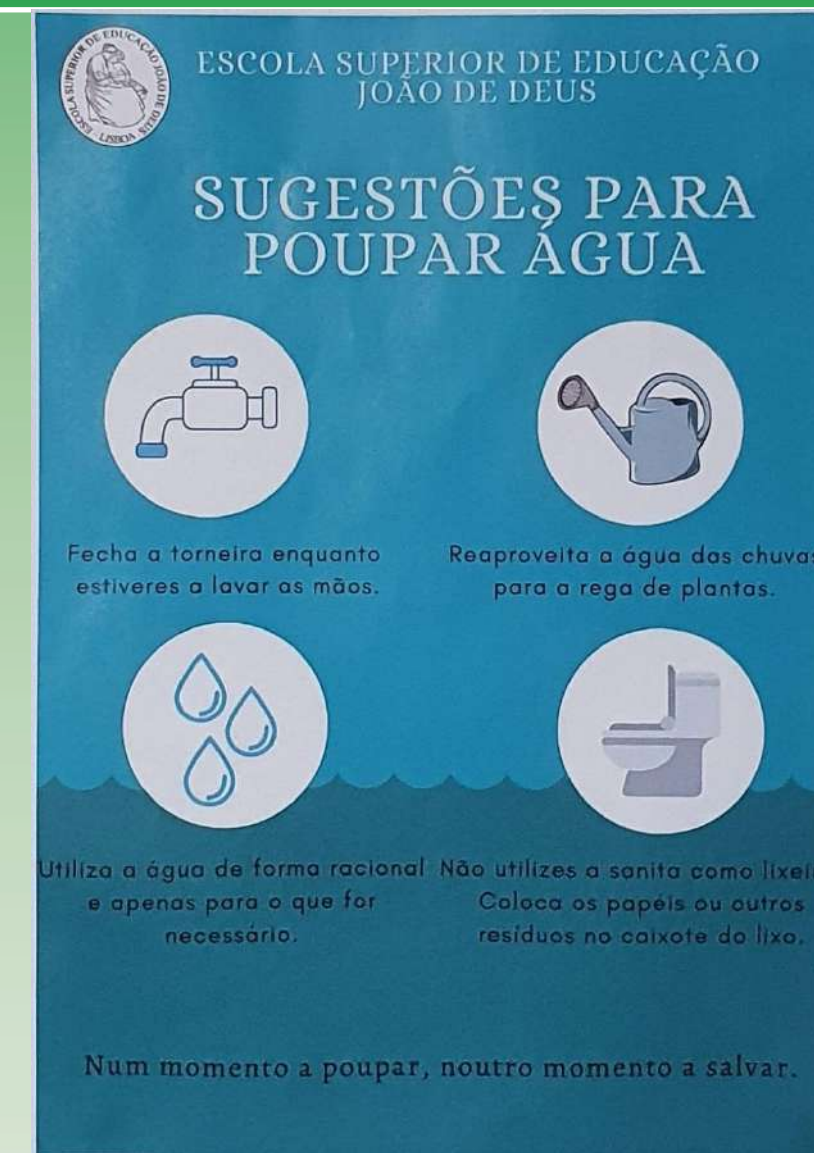
***Escola Superior de Educação João de Deus (ESEJD)***





Registo Mensal de consumos:

	Data:	Registo (m³):	Nome do contador:	
1	03/09/2020	66775,00	ESEJD	+
2	10/09/2020	66853,00	ESEJD	+ -
3	14/09/2020	66883,00	ESEJD	+ -
4	21/09/2020	66918,00	ESEJD	+ -
5	26/10/2020	67179,00	ESEJD	+ -
6	10/11/2020	67284,00	ESEJD	+ -
7	17/11/2020	67336,00	ESEJD	+ -
8	29/12/2020	67519,00	ESEJD	+ -
9	04/01/2021	67526,00	ESEJD	+ -
	Data:	Registo (m³):	Nome do contador:	



*1st and 2nd years  
Several activities were carried out by different classes related to water signage at ESEJD, monitoring of consumption, and raising awareness for saving this resource.*

*Water*

*ESEJD*



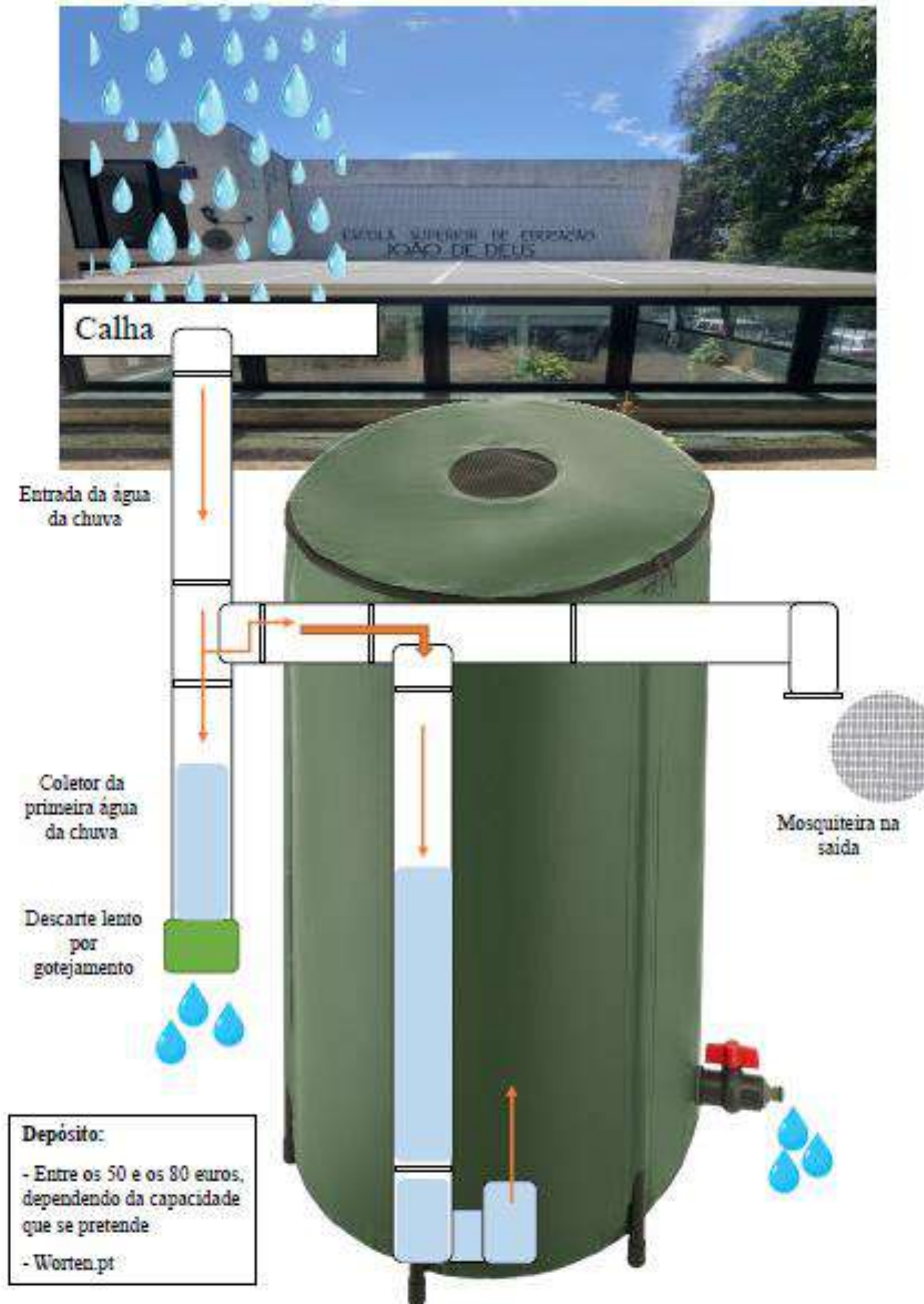


*3rd year  
Proposal for rainwater harvesting equipment  
developed by 3rd-year LEB students.*

*Water*

***Escola Superior de Educação João de Deus 2022/2023***

### Depósito de aproveitamento de águas pluviais





# Biodiversity preservation



Nas mãos do Educador estão as flores de amanhã. Pois, então, ensinemos com amor a construir uma Terra sã!

Daniela Noivo

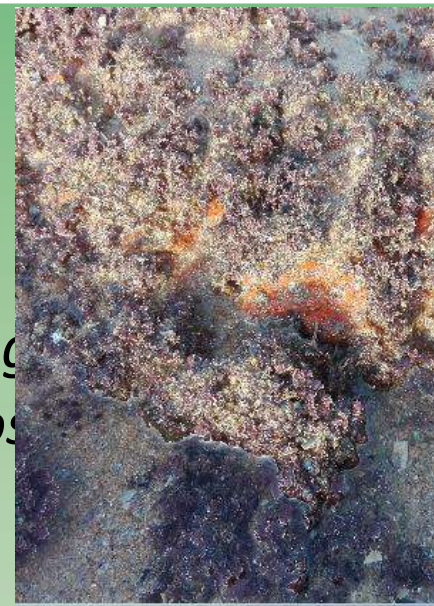
*Environmental Commemorative Days Celebration of Earth Day (April 22nd) - The students' work was published on ESEJD's social media platforms.*

*Biodiversity*

**Escola Superior de Educação João de Deus (ESEJD)**





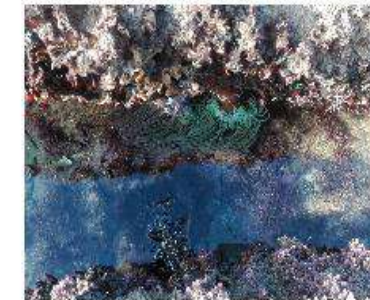


**ESPONGIÁRIOS**

- *Hymeniacidon sanguinea*



**CNIDÁRIOS**



**Interdisciplinary integration project** aimed to:  
*The Avencas Marine Protected Area was established to protect the natural richness of this coastal area, serving as a good example of how protection and preservation can contribute to maintaining or increasing biodiversity. Students conducted observations, image recording, and classification of the main groups of invertebrate animals, analyzed factors influencing observed distribution patterns, including physical-chemical and biological factors.*

**Marine Biodiversity of the Avencas Protected Area**  
*Work carried out by 2nd-year students of the Degree in Basic Education, in the Physical and Natural Sciences Unit, under the guidance of Professor Diana Boaventura, PhD.*

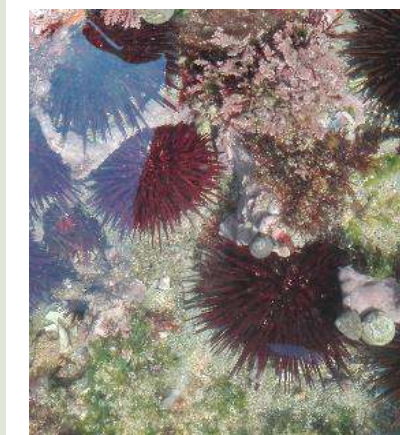
**OCEAN**

**ESEJD**

**MOLUSCOS:**



**EQUINODERMES**



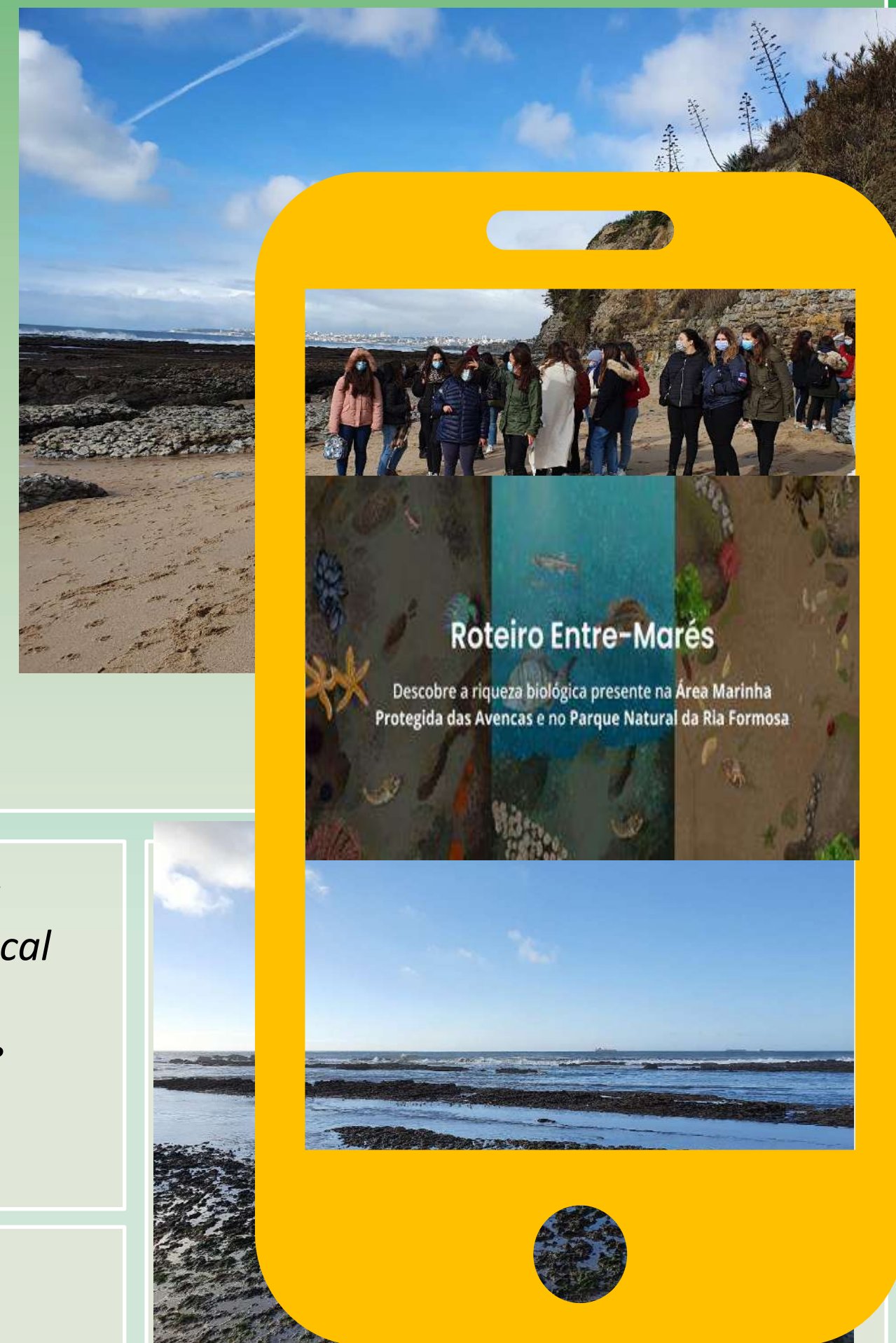




*Study visit to the Marine Protected Area (MPA) of Praia das Avencas with 2nd and 3rd-year students of LEB, for a practical class on the biodiversity of this MPA. A digital educational resource, the "Roteiro Entre Marés" app, was used, and the contribution of this educational resource to teacher and educator training was analyzed.*

*Ocean Biodiversity*

**ESEJD 2021/2022**



<https://play.google.com/store/apps/details?id=com.lasige.roteiroentremares>





### *Terrestrial Biodiversity of Monsanto Park*

*Study visit conducted on January 13, 2021, to the Interpretation Center of Monsanto (Biodiversity Space and FitoETAR).*

*3rd-year students of the Bachelor's Degree in Basic Education as part of the Curricular Units of Didactics of Environmental Studies*  
**Forest**

**ESEJD**



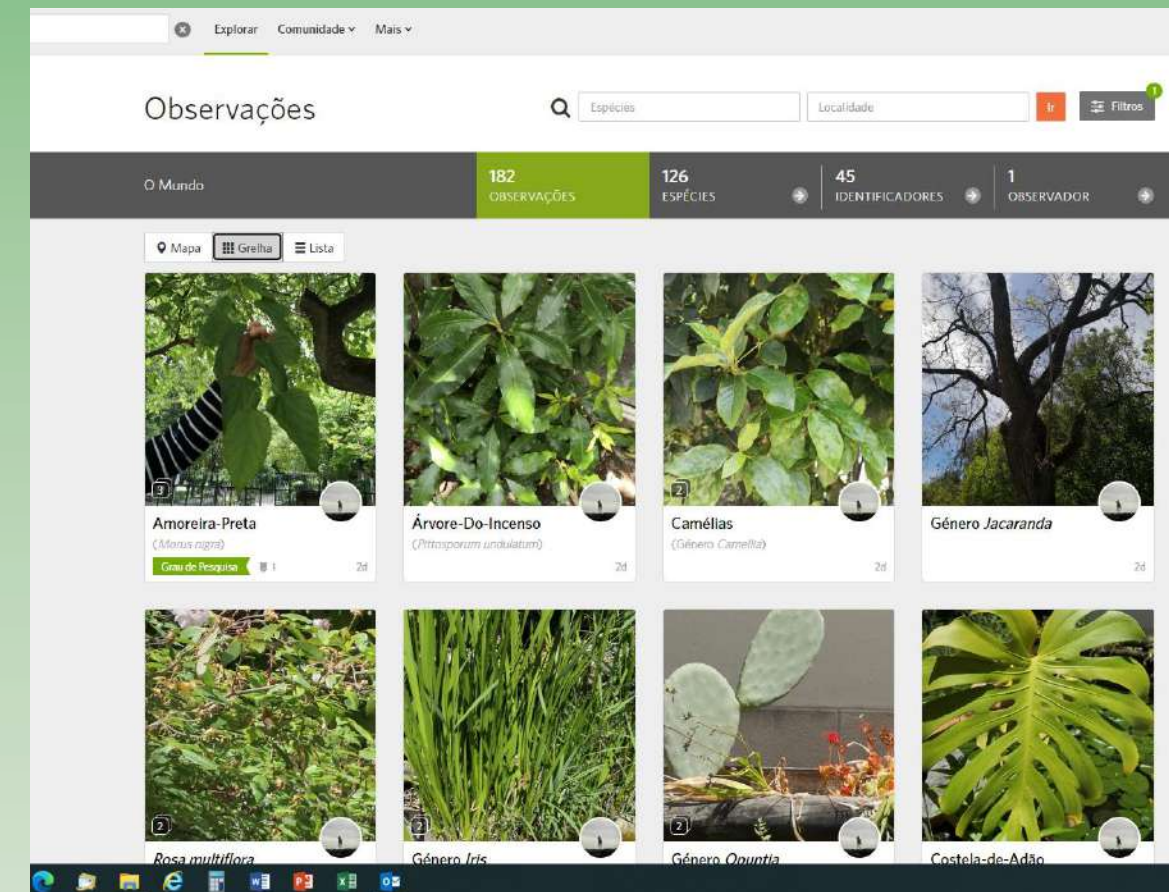


### Escola Superior de Educação João de Deus

18 de maio · 🌐

No dia 17 de maio, a convite da nossa Docente Diana Boaventura tivemos o prazer de contar com a presença de uma especialista em Botânica, a Dra. Patrícia Silva que ajudou na identificação das espécies de plantas do jardim adjacentes à da Escola Superior de Educação João de Deus, de modo a possibilitar um maior conhecimento da sua biodiversidade.

As imagens das diferentes espécies foram inseridas na plataforma digital iNaturalist.

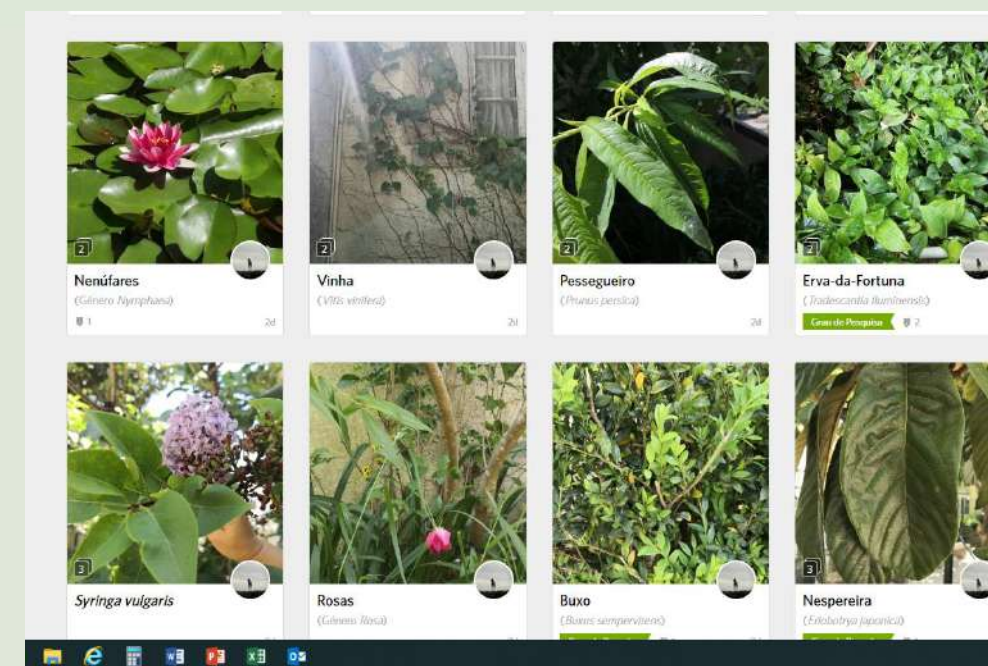


### Outdoor space of ESEJD: Plant Identification

<https://www.facebook.com/esejoaodedeus/photos/pcb.4196193187067310/4196192197067409/?type=3&theater>

Outdoor spaces

ESEJD







*Third-year students of the Degree in Basic Education cataloged the plants in ESEJD's garden to showcase biodiversity and promote improvement of the outdoor space. The signs identifying plant species were created by students in the Ecology and Environment Curricular Unit, under the guidance of Professor Diana Boaventura. Also collaborating in this action were botanical specialist Patrícia Pinto Silva, ceramic workshop participant Hugo Fernandes, and Professor Filomena Moreira da Silva.*

*Outdoor spaces*

**ESEJD 2021/2022**



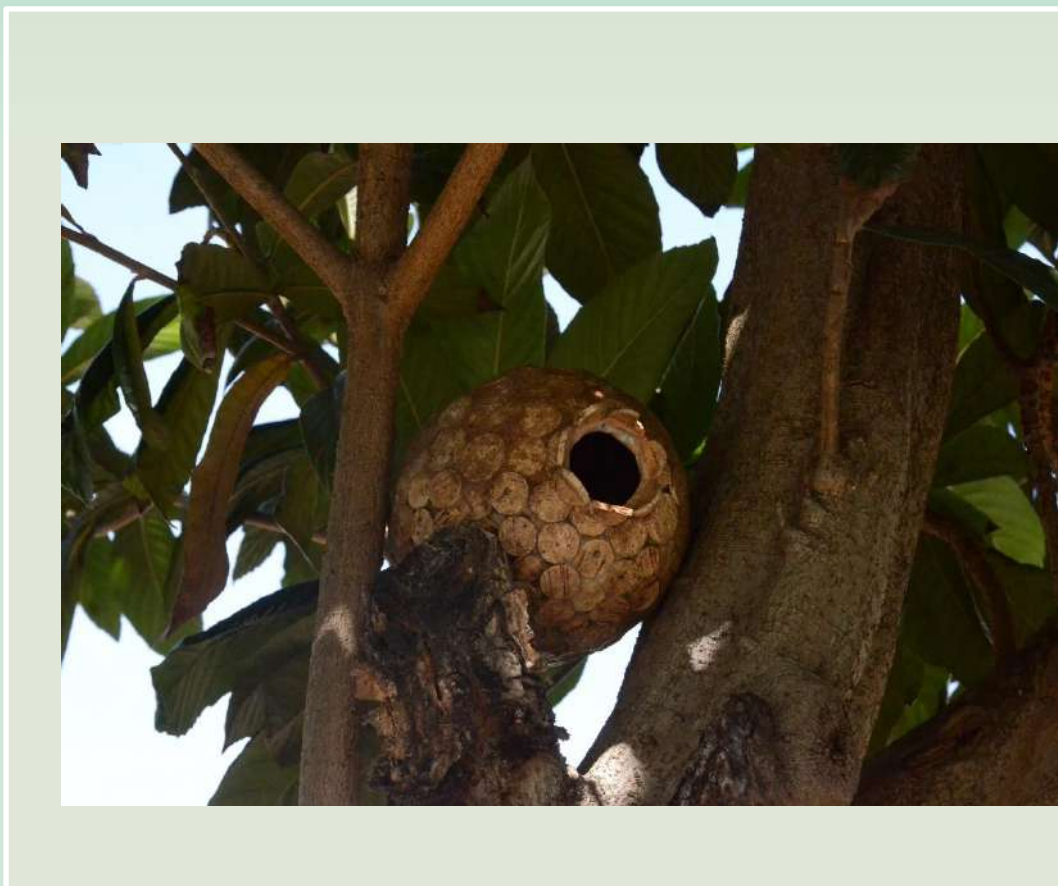




*Placement of bird nests and water feeders in the outdoor garden space of ESEJD.*

*Outdoor spaces and Biodiversity*

***ESEJD 2021/2022***







*International Day for Biodiversity was celebrated with an activity from the "5-Star Garden" project: a workshop on insect hotels, involving 4th-grade students from Jardim-Escola João de Deus da Estrela and students from Escola Superior de Educação João de Deus.*

*Biodiversity*

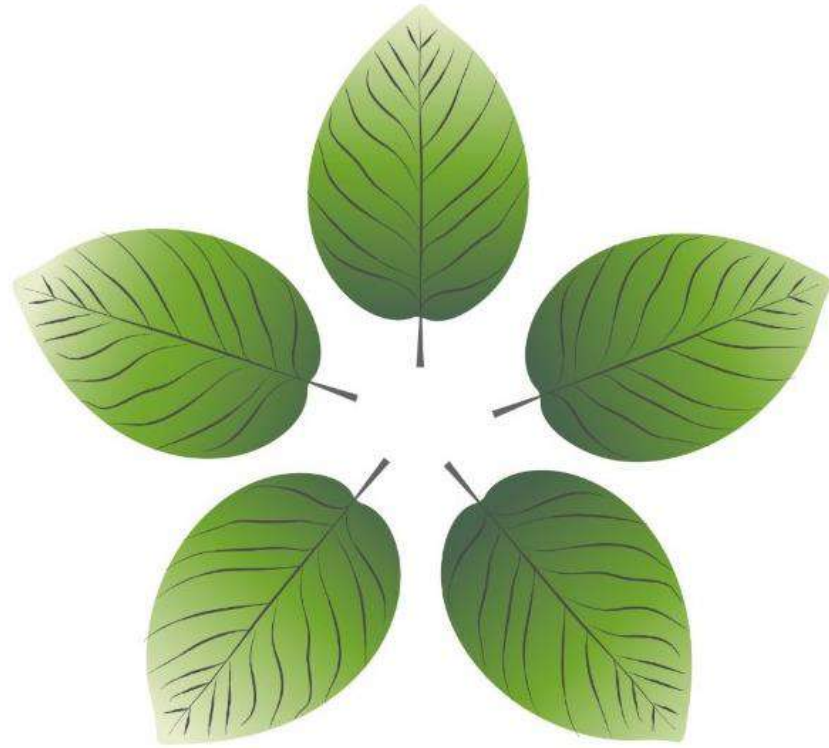
***Escola Superior de Educação João de Deus 2022/2023***





# Other projects





*jardim 5 estrelas*

The present project aims to raise awareness within the local community and school about the **need for preservation and sustainability of natural ecosystems.**

Collaborative efforts between ESEJD academic community, elementary students, and the local community have resulted in impactful Education for Sustainable Development (ESD) projects, such as the **creation and implementation of intergeneration sustainable actions in a green urban garden in partnership with Lisbon City Council.**

*The project application for "A Estrela + Verde: Jardim 5 Estrelas" was carried out by the students and coordinating teachers of the Eco-Campus project.*

*Project Lisboa + verde*

***Escola Superior de Educação João de Deus (ESEJD)***





## Award ceremony for the Lisbon + Green competition.



*The "5-Star Garden" project, conducted by students and coordinating teachers of the Eco-Schools project, aims to educate for sustainability, promote scientific and ecological literacy, train active and responsible citizens, and raise awareness within the local community and school about the need for preservation and sustainability of natural ecosystems.*

*Awarded project in the Lisbon + Green competition organized by the Lisbon City Council (CML).*

**ESEJD 2021/2022**





# Planting and cataloging of plant species in Jardim da Estrela.



*The "5-Star Garden" project is conducted by students and coordinating teachers of the Eco-Schools project. The aim is to implement an action plan that involves the local community and the João de Deus School Gardens Association in revitalizing Jardim da Estrela.*

*Awarded project in the Lisbon + Green competition organized by the Lisbon City Council (CML).*

**ESEJD 2021/2022**







## Project Jardim 5 Estrelas

*Biodiversity, Forest, Outdoor spaces*

**Escola Superior de Educação João de Deus  
2021/2022**

### Ano letivo 2022/2023 – Outras atividades desenvolvidas

Atividade	Data	Participantes
Retanchas	novembro	Por cada ação: Alunos JE João de Deus da Estrela Docentes do JE João de Deus da Estrela Estudantes da ESEJD Colaboradores CML
Mondas	dezembro	
Limpeza de folhas e varredura		
Sachar	3 março	Total de <b>28 participantes:</b> <ul style="list-style-type: none"> <li>• 24 alunos do 2.º ano do 1.º ciclo</li> <li>• 2 docentes do JE João de Deus da Estrela</li> <li>• 2 colaboradores da CML</li> </ul>
Recolha de folhas para um herbário	13 de março	Total de <b>46 participantes:</b> <ul style="list-style-type: none"> <li>• 44 alunos do 1.º ano do 1.º ciclo</li> <li>• 2 docentes do JE João de Deus da Estrela</li> </ul>
Catálogo de árvores	21 de abril	Total de <b>25 participantes:</b> <ul style="list-style-type: none"> <li>• 21 alunos do 3.º ano do 1.º ciclo</li> <li>• 1 docente do JE João de Deus da Estrela</li> <li>• 3 colaboradores da CML</li> </ul>
Piquenique sustentável	21 de abril	Total de <b>55 participantes:</b> <ul style="list-style-type: none"> <li>• 47 alunos do 1.º ano do 1.º ciclo</li> <li>• 2 docentes do JE João de Deus da Estrela</li> <li>• 3 estudantes da ESEJD</li> <li>• 3 colaboradores CML (Rosa Couto, Márcia Amiel, Gentil Rocha)</li> </ul>
Piquenique sustentável	28 de abril	Total de <b>56 participantes:</b> <ul style="list-style-type: none"> <li>• 49 alunos do 2.º ano do 1.º ciclo</li> <li>• 2 docentes do JE João de Deus da Estrela</li> <li>• 2 estudantes da ESEJD</li> <li>• 3 colaboradores CML (Rosa Couto, Márcia Amiel, Gentil Rocha)</li> </ul>
Catálogo de árvores	28 de abril	Total de <b>30 participantes:</b> <ul style="list-style-type: none"> <li>• 25 alunos de Educação Pré-Escolar (faixa etária 4 anos)</li> <li>• 1 docentes do JE João de Deus da Estrela</li> <li>• 1 estudante ESEJD</li> <li>• 3 colaboradores da CML</li> </ul>
Workshop sobre hotéis de insetos  (Dia Internacional da Biodiversidade)	22 de maio	Total de <b>54 participantes:</b> <ul style="list-style-type: none"> <li>• 45 Alunos do 4º ano do 1.º ciclo</li> <li>• 2 docentes do JE João de Deus da Estrela</li> <li>• 2 estudantes ESEJD</li> <li>• 3 docentes da ESEJD</li> <li>• 2 Parceiros da CML</li> </ul>
Ação de Sensibilização para Utilização de Espaços Verdes (Dia Nacional dos Jardins) Alunos utilizaram jogos diversos e distribuíram flyers com utilização correta do jardim	25 de maio	Total de <b>62 participantes:</b> <ul style="list-style-type: none"> <li>• 45 Alunos do 3º ano do 1.º ciclo</li> <li>• 2 docentes do JE João de Deus da Estrela</li> <li>• 1 colaboradora de JE da Estrela</li> <li>• 2 Encarregados de Educação dos alunos do JE da Estrela</li> <li>• 4 Estudantes da ESEJD</li> <li>• 3 Docentes da ESEJD</li> <li>• 1 Colaboradora da ESEJD</li> <li>• 2 Parceiros da CML</li> <li>• 2 Universidade Segura</li> </ul>



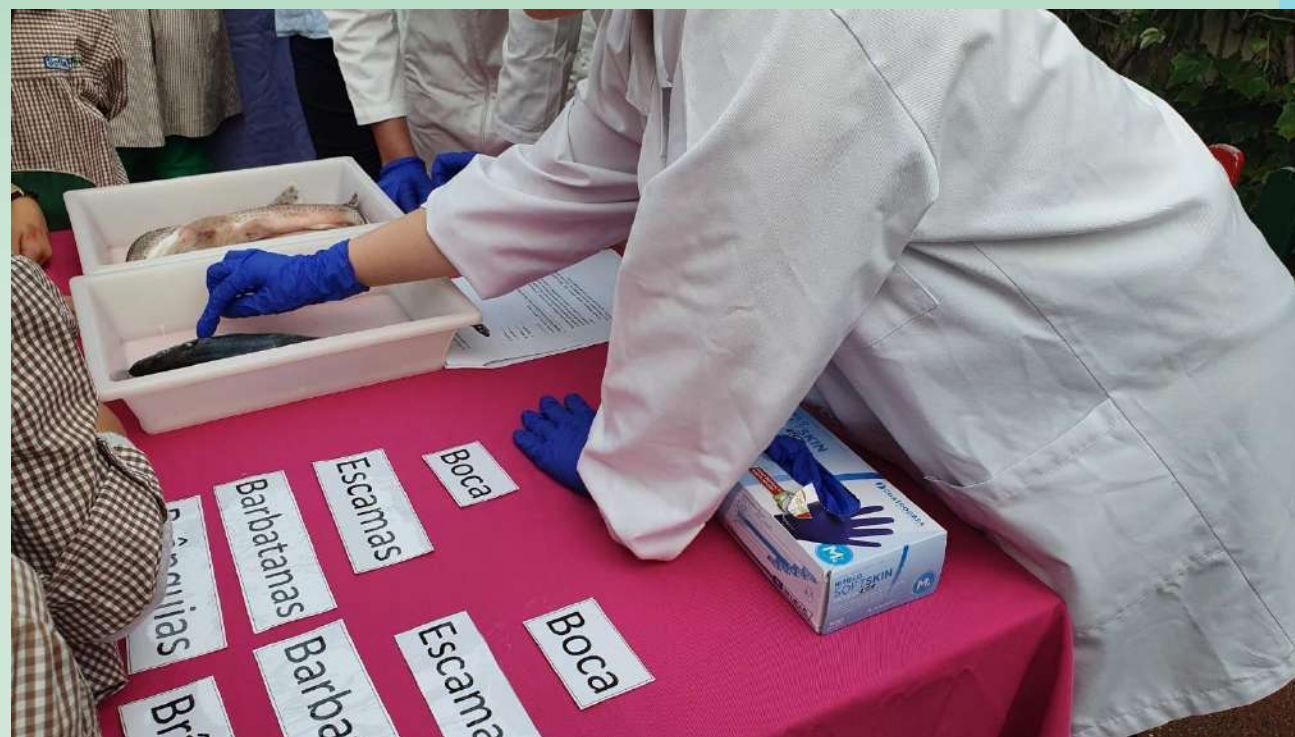


*On World Oceans Day (June 8), the Science Fair "Scientist in Sight...In the Sea" was held with primary students from the 1st cycle of Basic Education at Jardim-Escola João de Deus de Alvalade. This event involved conducting experimental activities to introduce children to the importance of ocean literacy, advocating for an ocean known and valued by all, aiming to bring everyone closer to understanding the ocean's importance in maintaining planetary balance and how much we can affect its functioning. Students from the 2nd year of the Degree and Master courses, ESEJD teachers and collaborators, and teachers from Jardim-Escola João de Deus de Alvalade participated in the event.*

*Ocean Literacy and Sustainability*

**ESEJD 2021/2022**





*Ocean Literacy and Sustainability*

**ESEJD 2021/2022**



# OCEAN LITERACY EDUCATION: COLLABORATION OF PRE-SERVICE, IN-SERVICE TEACHERS AND ELEMENTARY STUDENTS IN SUSTAINABLE ACTIONS

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<sup>1</sup>*Escola Superior de Educação João de Deus (PORTUGAL)*

<sup>2</sup>*MARE- Marine and Environmental Sciences Centre (PORTUGAL)*

<sup>3</sup>*Associação de Jardins-Escolas João de Deus (PORTUGAL)*

## Abstract

Education for Sustainable Development (ESD) is recognised as a key tool for achieving the SDGs. To create a more sustainable world, citizens must be agents of change and, in order to do this, they need knowledge, skills, values and attitudes that enable them to understand the interactions between the fundamental domains of sustainability - environment, society and economy.

Ocean literacy (OL), defined as the understanding of how dependent we all are on the marine ecosystems and how those depend on our attitudes, is simultaneously a fundamental foundation and objective of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), which will require new educational approaches. However, OL and ocean-related educational practices are not yet widely present within school curriculum worldwide. Therefore, raising awareness on marine environmental issues is decisive to develop students' knowledge on ocean sustainability and to promote critical thinking.

This study aimed to analyse the effect of the creation and implementation of a science fair on the theme of ocean sustainability and a beach cleaning action, on the learning and satisfaction of the scholar community. The participants of this educational experience included elementary students (6 to 9 years old), pre-service teachers and in-service teachers.

Pre-service and in-service teachers organised the science fair with ten different experimental activities. They also prepared all the materials and worksheets to support the experiments. Students were able to perform all experimental activities during the science fair. Prior to the science fair elementary students watched videos about ocean literacy. Finally, they participated on a beach cleaning action, analysing and quantifying marine litter.

In order to assess how these activities contributed to participants OL, a mixed methodology was applied using: questionnaires to students (n=174), pre-service teachers (n=34), and in-service teachers (n=3); focus group interviews to pre-service teachers (n=10); and content analysis of the worksheet done by pre-service teachers (n=10) and filled by students (n= 200) during the activity.

The results revealed an improvement of scientific knowledge of elementary students on ocean sustainability, particularly in their knowledge about ocean literacy concept itself. Additionally, students develop specific scientific skills during the activities, such as, observation, the use of scientific protocols, critical thinking and teamwork. Both in-service and pre-service teachers recognized the importance of participating in this new educational approach for their own pedagogical practice.

In conclusion, the scholar community recognized the importance of sustainability education for engaging and empowering students and teachers. The activities enabled the participants to develop knowledge, skills and values, allowing them to increase responsibility for their own actions and to contribute for a sustainable future.

Keywords: Education for sustainability, ocean literacy, pre-service teachers, in-service teachers, elementary students, Science fair.

## 1 INTRODUCTION

Education for Sustainable Development (ESD) is recognised as a key tool for achieving the SDGs. To create a more sustainable world, citizens must be agents of change and, in order to do this, they need

# Dissemination of the project

Initiatives like Science Fairs dedicated to sustainable themes have provided opportunities for ESEJD students to engage with elementary students, teachers, and parents through hands-on experimental activities.





*Celebrating Ocean Conference Week and as part of the Eco-Schools program (#AMARoMAR project), a beach cleanup action was carried out at Carcavelos Beach, involving students and teachers from Jardim-Escola João de Deus de Alvalade and students from Escola Superior de Educação João de Deus.*

*Project #AMARoMAR*

**ESEJD 2021/2022**

Ficha de Registo   Brigada AMARoMAR			
Data:	24/06/22		
Nome da Praia:	Carcavelos		
Não esquecer de preencher os campos de identificação local e a Ficha Brigada AMARoMAR!			
Identificação da Praia			
Concelho:	Lisboa		
Distrito:	Lisboa		
Tipologia da Praia:	<input checked="" type="checkbox"/> Anésia <input type="checkbox"/> Cavado <input type="checkbox"/> Duna <input type="checkbox"/> Fluvial		
Complimento (m):	Área abrangida pela limpeza:		
Largura (m):	KMs percorridos na limpeza:		
Coordenadas Geográficas (N/E; E/O):			
Identificação da equipa de recolha			
Nome da Escola:	Jardim-Escola João de Deus de Alvalade		
Nº total de participantes:	80		
Concelho da Escola:	Lisboa		
Duração da campanha (minutos):	50		
Informação adicional			
Data da última vez que o local foi limpo:	25/06/22		
Alguns das condições atmosféricas e segue indicadas abaixo a data de realização da campanha?			
Vento <input checked="" type="checkbox"/>	Chuva <input type="checkbox"/>	Calor <input type="checkbox"/>	Frio <input type="checkbox"/>
Peso Total de lixo recolhido na limpeza (Kg):	2,5	Estimativa do volume total de lixo recolhido	
Lixo e Impacte			
Item mais fora do comum recolhido:	Fragmentos de plástico		
TOP 3 dos itens mais recolhidos:	1º: Plástico, 2º: Plástico, 3º: Plástico		
Encontraram máscaras, luvas ou embalagens de desinfetante?	Sim <input type="checkbox"/> Não <input checked="" type="checkbox"/>		
Tem conhecimento de algum evento que tenha contribuído para o lixo encontrado? Se sim, qual?			
Encontraram lixo que não conseguiram recolher?	Sim <input type="checkbox"/> Não <input checked="" type="checkbox"/>		
Encontraram animais mortos?	Sim <input type="checkbox"/> Não <input checked="" type="checkbox"/>		
Local: Lido de Carcavelos			
Outras Observações   Comentários			

Nota: Não esquecer de preencher o campo "Concelho de Lixo Marítimo". Mais informações em: <https://www.ambiente.pt/pt/pt/ambiente/lixo-maritimo>

Continuar o preenchimento do formulário no separador seguinte: "Ficha Brigada AMARoMAR"



# Climate change mitigation





*Road safety awareness campaign "Cycle Safely jardim 5-estrelas". Accompanied by police officers from the PSP, students and teachers from ESE João de Deus were present.*

*Soft mobility*

**ESEJD 2021/2022**





*On January 4th, we welcomed Miguel Jorge, a Master's student from the Faculty of Sciences of the University of Lisbon (FCUL), to the Escola Superior de Educação João de Deus (ESEJD). He engaged students from the 2nd and 3rd year of the Bachelor's Degree in Basic Education in his research on Ocean sustainability. The ESEJD students had the opportunity to read a news article or watch a video titled "The Voice of the Ocean" and respond to questionnaires about this activity.*

*Ocean and Climate Change*

***Escola Superior de Educação João de Deus 2022/2023***





<https://youtu.be/2elkDSd-8ig>



*"The Voice of the Ocean" is a user-generated video created by three students from the Master's program in Marine Ecology at the Faculty of Sciences of the University of Lisbon. It addresses topics related to threats to the marine environment. It also includes testimonials from various individuals of different nationalities and age groups regarding their relationship with the ocean and how they use it, and it concludes with a message intended for future generations.*

*Ocean and Climate Change*

**Escola Superior de Educação João de Deus 2022/2023**

Escola Superior de Educação João de Deus

## COLÓQUIO SOBRE O VÍDEO "A VOZ DO OCEANO"

Apresentado por Miguel Jorge, aluno do Mestrado em Ecologia Marinha, da FCUL

e

### APRESENTAÇÃO DE TRÊS LIVROS SOBRE AMBIENTE E SUSTENTABILIDADE

- "O jogo das alterações climáticas", de BRUNO PINTO, QUICO NOGUEIRA e NUNO DUARTE
- "A Revolta da Natureza em Brimsa", de VANDA BROTA GONÇALVES
- "A Barriga Cheia da Baleia", de CARINA VALENTE



No âmbito da celebração do Dia Europeu do Mar e do Dia Eco-Escolas, reunião entre estudantes da Escola Superior de Educação João de Deus e da Faculdade de Ciências da Universidade de Lisboa

**25 de maio de 2023, quinta-feira, das 14h00 às 16h00**

**Salão Nobre do Museu João de Deus**

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## Impact of an Inquiry-Based Science Activity about Climate Change on Development of Primary Students' Investigation Skills and Conceptual Knowledge

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### ABSTRACT

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Climate change is one of the major challenges facing society today and more effective education is needed on this topic. This study analysed the effects of an inquiry-based science activity about climate change effects in ocean ecosystems, done in a research laboratory and in the classroom, on primary students' knowledge, investigation skills and satisfaction. Data were collected through the application of pretests and posttests, direct observation, questionnaires, interviews and document analysis. Results revealed an increase in students' scientific knowledge and application to new situations. Regarding investigation skills, all students were able to make predictions, and to easily observe and register data. However, experimental planning and conclusions were more difficult for them. Students and teachers emphasised their satisfaction with the outdoor activity, teamwork and the subject. The present study revealed a positive effect of the participation in the inquiry-based activity, embedded on a socio-scientific issue, in students' conceptual knowledge and in the development of investigation skills.





# Discussion and next steps

- In general, the actions have not only enhanced ESEJD's infrastructure through measures to reduce water and electricity consumption (reduction > 20%), manage waste, and improve outdoor spaces, but also contributed to increasing students' awareness on climate change, biodiversity conservation and the importance of ecosystem services.



- Despite achievements, challenges persist in ensuring broader student engagement, especially during curriculum assessments.
- This experience underscores the importance of a holistic "whole-institution approach" to ESD in higher education institutions, encompassing facilities management, research, education, governance, community engagement, and innovation, to foster sustainability culture and effectively greening campuses.





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# THANK YOU

SUपोर्टED BY:

