

WORKSHOP

e-lab: um laboratório *online*

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MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

Portugal

Introduction

- Students questions seem to disappear along with time.
- Students show lack of motivation when learning Science.
- The above situation is dependent of:
 - Classic teaching approach;
 - Missing contextualization of scientific concepts.

Introduction

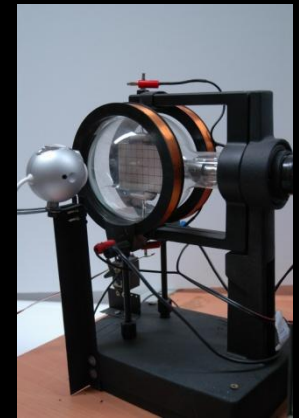
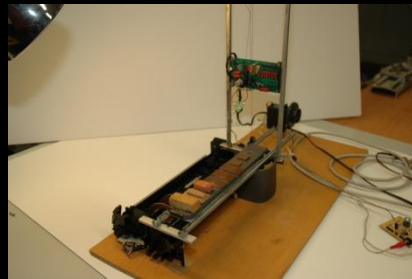
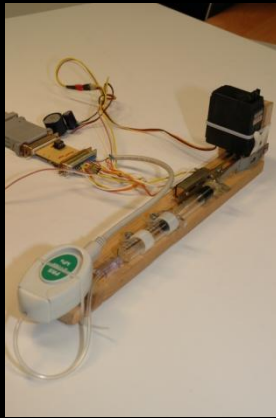
- A study performed in 2006 [1] suggests that experimental work and new technologies are valuable resources to increase motivation of students in science learning.
- The e-lab platform has the above valences.

Objectives

- Allow teachers' and students' access to a laboratory where is possible to collect data in real time.
- Perform experiments that need expensive material and without concerns with safety precautions.

Objectives

- e-lab is a platform for science teaching that aims to develop scientific knowledge and motivation on students.



Description – preliminary study

- Continuous training 26/09/2009 – 21/11/2009
- 15 teachers of primary and secondary school of Portugal in Lisbon region
- 9 sessions of 4 hours (evaluation in the last session)
- Developed in Moodle

Description – preliminary study

- Introduction to e-lab platform
- Tools for data analysis
- Exploration of the e-lab in physic and chemistry teaching

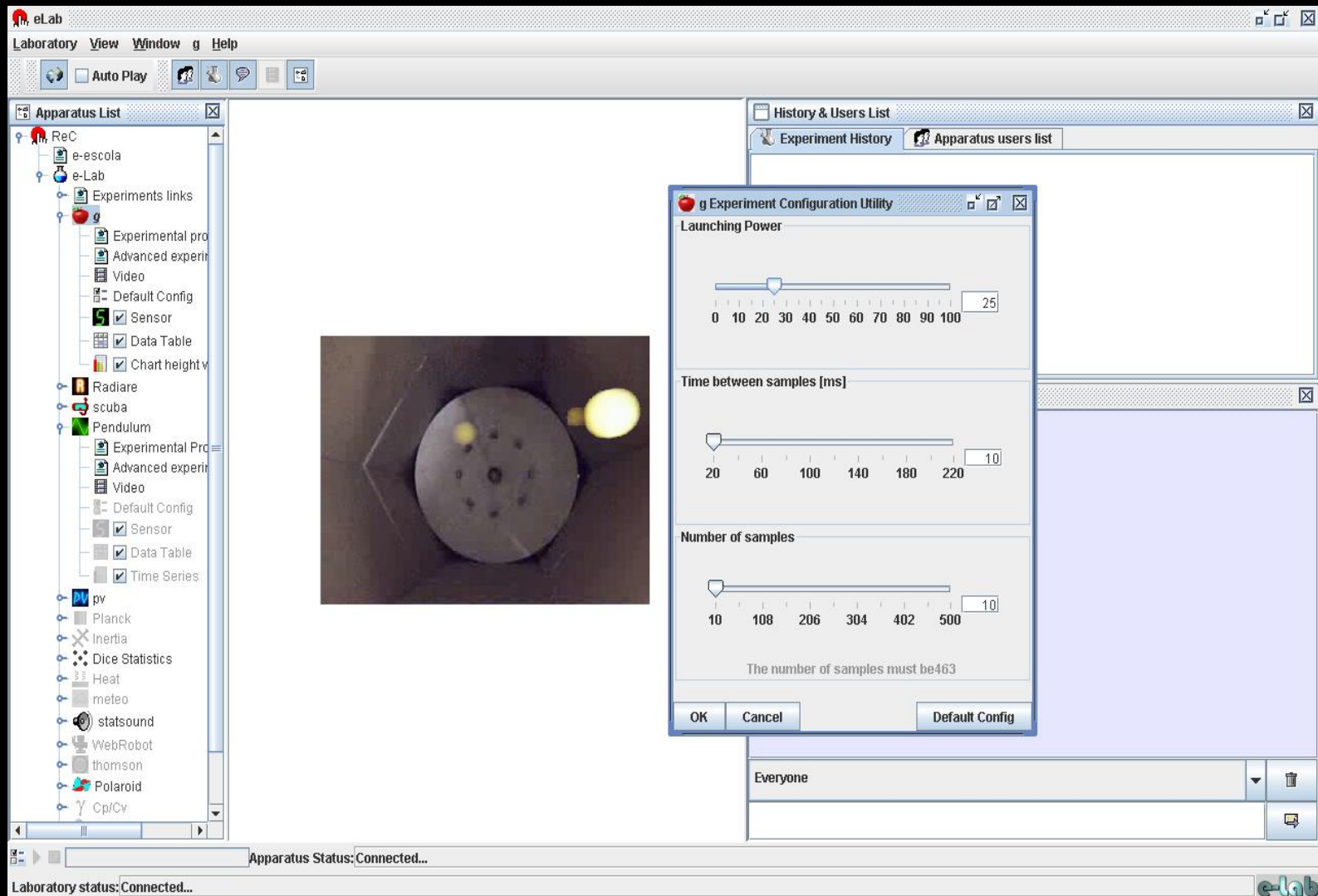
Description – preliminary study

- Experiments explored by teachers:
 - determination of gravity value (on Earth);
 - pressure change with volume (Boyle-Mariotte law);
 - pressure change with depth (hidrostatic law);
 - launching data (statistics).

Description – preliminary study


- At the end teachers are expected to:
 - (i) know how to use the e-lab interface;
 - (ii) know the experiments that already exist;
 - (iii) have a global vision on the e-lab internal structure and functioning;
 - (iv) be able to contribute to the improvement of e-lab interface;
 - (v) be able to propose others experiments and resources;
 - (vi) propose and know more scientific resources.

Almost extinct interface




New interface


Laboratório Ver Linguagem Ajuda




Escolher experiência:

 Pendulum


SAIR

 Decaimento Radioactivo


[Abrir](#) | [Conf.](#) | [Apagar](#)

 Boyle Mariotte

[Abrir](#) | [Conf.](#) | [Apagar](#)

 Decaimento Radioactivo

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 Boyle Mariotte

[Abrir](#) | [Conf.](#) | [Apagar](#)

Descrição

Controlador


Resultados

Utilizadores


Fricção

☒ Sem fricção ☐ 27 ☐ 17 ☐ 12


Ângulo Inicial

 10


Número de Amostras

 10


Frequências

 10

Altura Inicial

 10

Defina os parâmetros que pretende e depois clique em play para lançar a experiência.



Vídeo em directo:



Chat da experiência:

Conclusion

- Enthusiastic inquiry results
- The use of experimental work and/or technologies in classroom seems essential to motivate students to scientific areas [1, 3, 4, 5, 6]
- We believe that e-lab is a proper tool for experiments data collection using a simple, functional, user-friendly platform with all the necessary resources for students and teachers

Next steps

- Perform a larger study
- Produce more pedagogical materials to e-lab
- Introduce new experiments

Challenge and Suggestions

- Use e-lab platform in school
- Suggest experiments to the e-lab

Multimedia support

- <http://www.e-escola.pt/elab.asp>
- <http://moodle.crie.min-edu.pt> (disciplina e-lab)
- http://elab.ist.utl.pt/rec/index_uk.html
(english version of almost extinct e-lab platform)
- <http://elab.ist.utl.pt/rec/index1.html>
(portuguese version of almost extinct e-lab platform)
- <http://elab1.ist.utl.pt/rec.am/Login.faces>
(portuguese version of new e-lab platform)

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