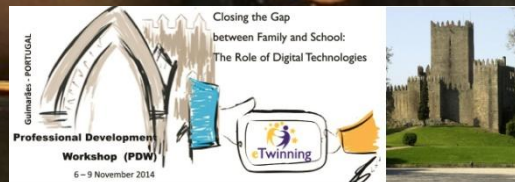




# Learning Science in Secondary Education using Flipped Learning methodology and tablets



João Sousa - Fernando Franco  
ERTE / DGE



# Over 500 years of teaching experience in this room – over 450 years of eTwinning experience in this PDW



Guimarães - PORTUGAL

Closing the Gap  
between Family and School:  
The Role of Digital Technologies

Professional Development  
Workshop (PDW)

6 – 9 November 2014

An illustration featuring a castle tower on the left, a smartphone in the middle, and a tablet on the right. The tablet displays the eTwinning logo, which consists of a stylized figure with arms raised and the word "eTwinning" below it.



Pan-European policy experimentations with tablets



**Home**

**About**

**Community**

**Scenarios**

**Observation**

**News**

WELCOME

## How can tablets support new ways of teaching and learning in schools?

- › The Creative Classrooms Lab (CCL) project is developing innovative teaching and learning scenarios involving the use of tablets in and out of school.
- › It will validate these in policy experimentations involving nine Ministries of Education in Europe and 45 classes that are already making use of tablets from different suppliers.
- › Ministries of Education will also seek to co-design action research pilots with industry partners that will be project Associate Partners.

[Read more about the project](#)





# **traditional lesson plan**

- 1. contents presentation**
- 2. guided practice**
- 3. group work**
- 4. independent work**
- 5. extension/reinf. activities (at home)**



# flipped lesson plan

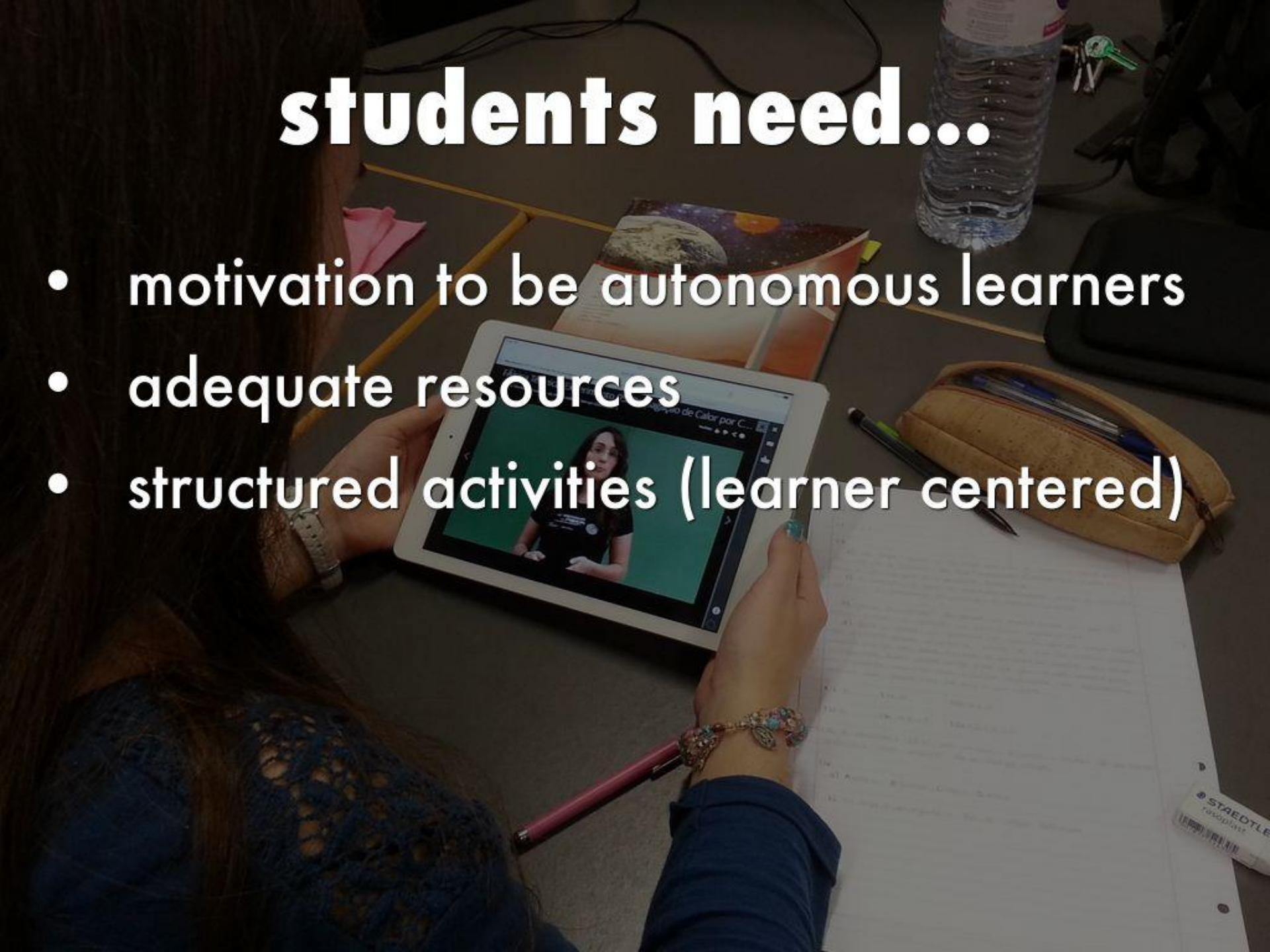
The background of the slide features a tablet displaying a video player with a play button and a progress bar. Below the tablet is a red pencil case with a zipper. The overall scene is dimly lit, with the text overlaid in white.

1. contents presentation (at home)
2. guided practice
3. group work
4. independent work
5. extension/reinforcement activities



# students need...

- motivation to be autonomous learners
- adequate resources
- structured activities (learner centered)



# presentation of the project/methodology







presentation of the  
technology





student  
training

# essay of the methodology

$$\begin{array}{c|c|c} 100 & 212 & 393 \\ \hline 25 & x & \\ \hline 0 & 52 & 245 \\ \hline C & F & K \end{array}$$
$$25 = \frac{x-32}{10x}$$

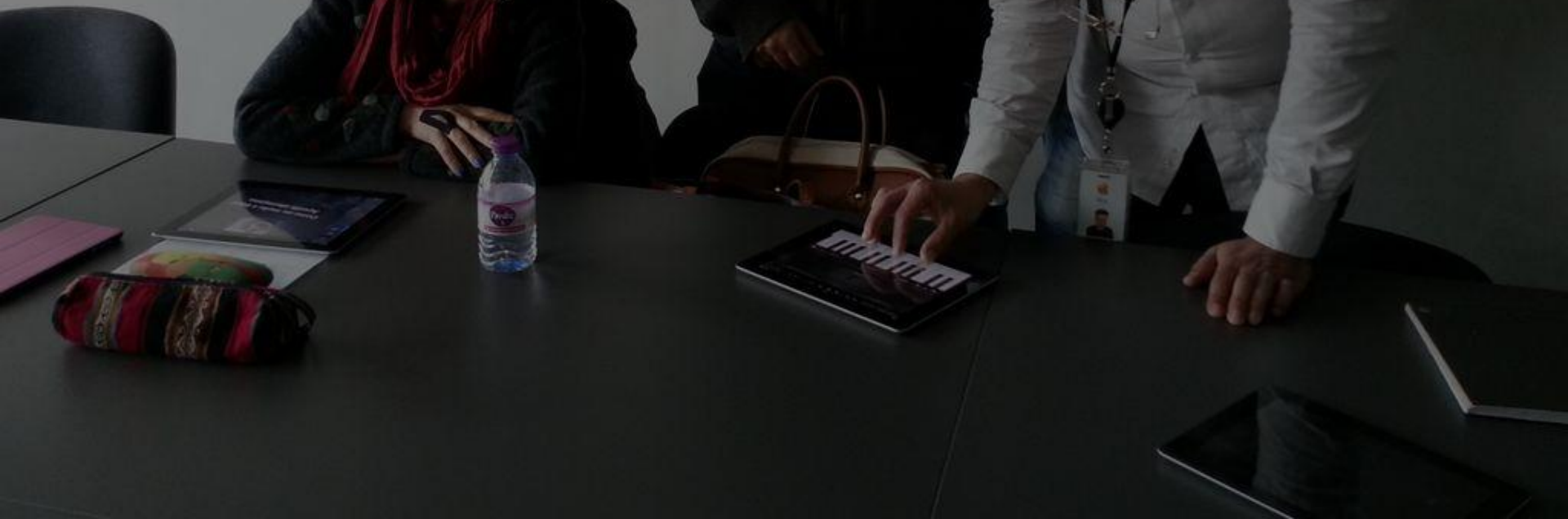


A man in a white shirt and dark pants stands on the left side of a large, modern hall, gesturing as he presents to a group of people seated on the right. The room has high ceilings with concrete panels and recessed lighting. A large wooden door is visible in the background. The text 'presentation of the project to the parents' is overlaid in white on the lower half of the image.

presentation of the project  
to the parents

# teachers need...

- training in the technology
- training in the methodology
- time and place to share experiences







training in  
the  
technology



training in the  
methodology

## AVALIAÇÃO COM PROPÓSITOS FORMATIVOS

Práticas sistemáticas de avaliação formativa melhoram substancialmente as aprendizagens dos alunos. São essas práticas que aprendem mais, mostram as aprendizagens. (Black & Wiliam, 1998)

### Permite

ao professor

identificar o conhecimento adquirido

verificar se os alunos estão entendendo o conteúdo

ajustar o ritmo das aulas de acordo com as necessidades dos alunos

ajudar os alunos a desenvolver habilidades de pensamento crítico

ajudar os alunos a desenvolver habilidades de comunicação

ajudar os alunos a desenvolver habilidades de colaboração

ajudar os alunos a desenvolver habilidades de resolução de problemas

Contribui significativamente para a melhoria do ensino e da



FEEDBACK

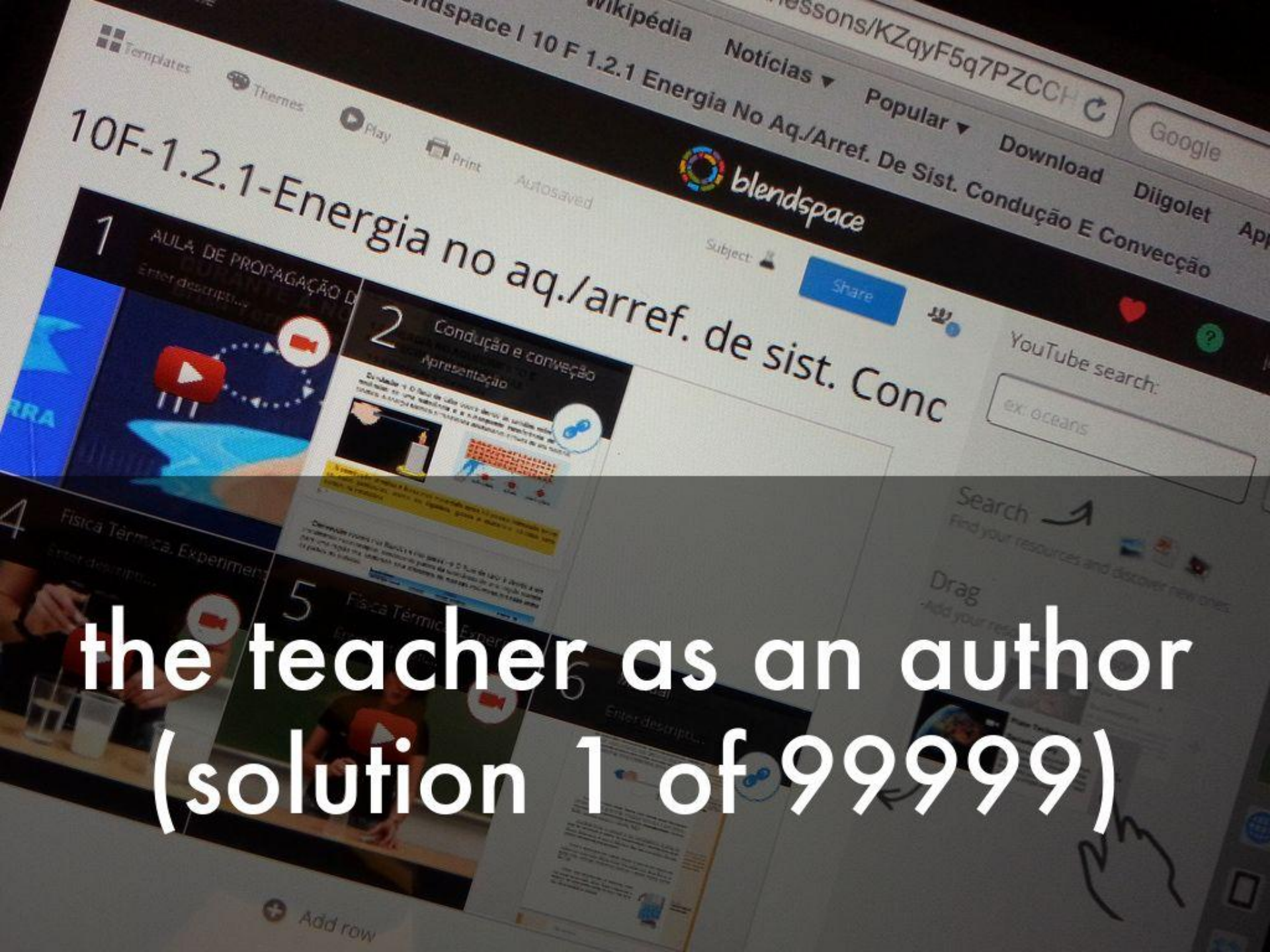
→

→





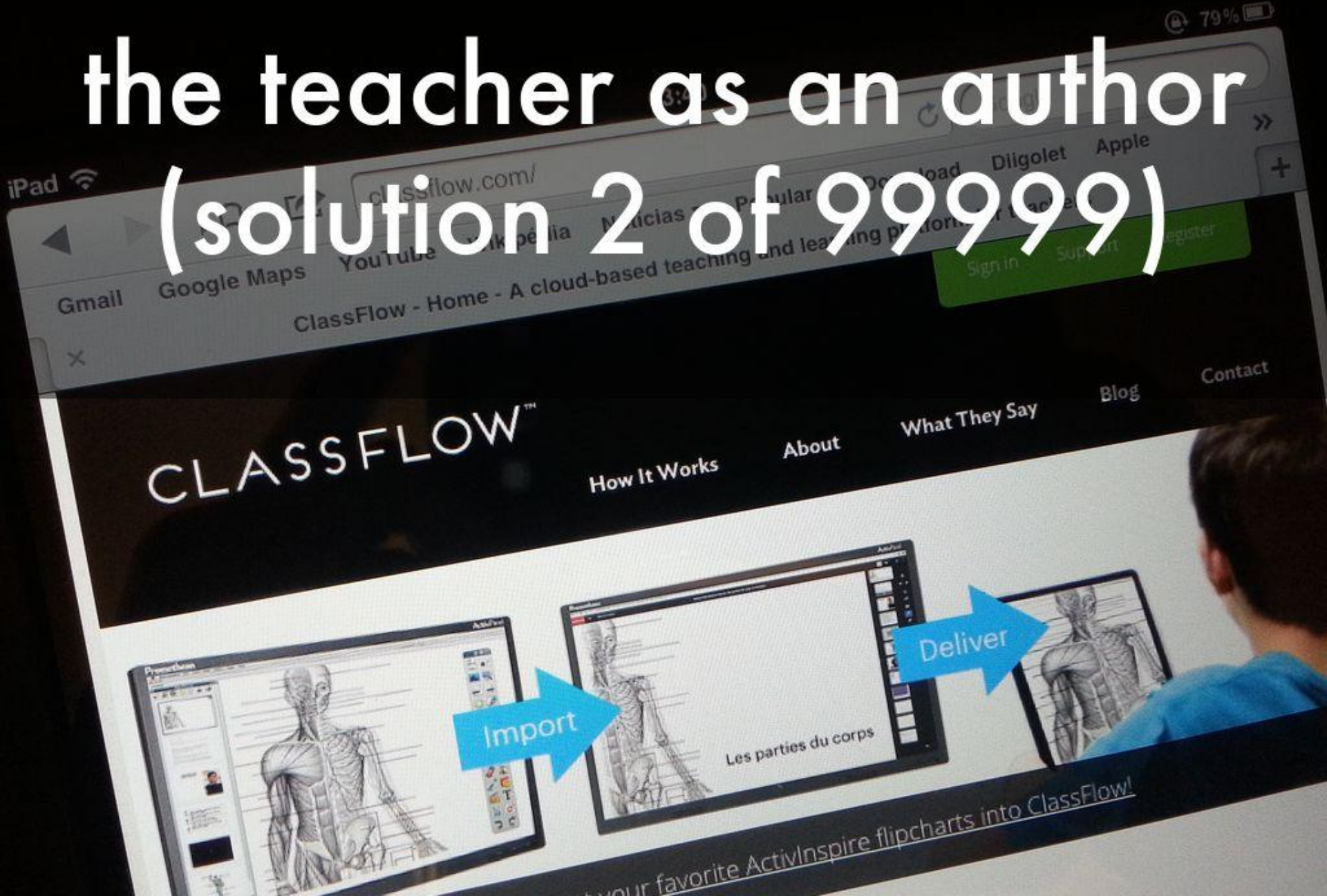
**time and  
place to  
share  
experiences**



the teacher as an author  
(solution 1 of 99999)



# the teacher as an author (solution 2 of 99999)







classroom scenarios



access resources





A photograph showing three students gathered around a table. One student in a patterned sweater is pointing at a tablet held by another student in a blue sweater. A third student in a pink sweater is partially visible on the left. On the table are a smartphone, a white plastic bag, a blue tablet, and a blue and white device with a circular logo. A book with 'SCIENCE' on the cover is also visible. The text 'students as explorers' is overlaid in white on a dark grey semi-transparent banner across the center of the image.

students as explorers



# students as authors



1.60 Quando dois corpos são colocados em contacto, qual é a condição para que ocorra uma transferência de energia de um para o outro (selecione a opção correcta)?

- A. Devem ter a mesma capacidade térmica.
- B. Devem ter diferentes capacidades térmicas mássicas.
- C. Devem ter temperaturas diferentes.
- D. Devem ter a mesma energia interna.

Teacher Cards Student Cards

Multiple choice

A B C D E

Start Poll ▶

Avaliação

interactivity  
(in the classroom)



# risks

- learning activities at home do not mean less teacher
- go one step at the time
- the solution for one student may not work for others
- diversify and structure



João Sousa  
joao.sousa@dge.mec.pt  
Fernando Franco  
fernando.franco@dge.mec.pt  
<http://goo.gl/hqflu4>





# Activity (ex: <http://blnds.co/1711Abv>)

1. Choose a (small) topic of a familiar subject
2. Choose a (limited) set of online resources for that topic
3. Structure them in a (simple and transparent) workflow. (Consider including self-assessment tasks)
4. (Create a Blendspace account)
5. Aggregate and order the resources in a Blendspace lesson
6. Share the URL of the lesson