



*pour les **P**rofesseurs et leurs **É**lèves :  
un **G**uide pour l'**A**pprentissage des **S**ciences  
et leur **E**nseignement*

<http://pegase.inrp.fr>

*Pegase* is supported by INRP

National Institute of Pedagogical Research

The website has been developed by *SESAMES* group

*(Situations d'Enseignement Scientifique :*

*Activités de Modélisation, d'Évaluation, et de Simulation)*

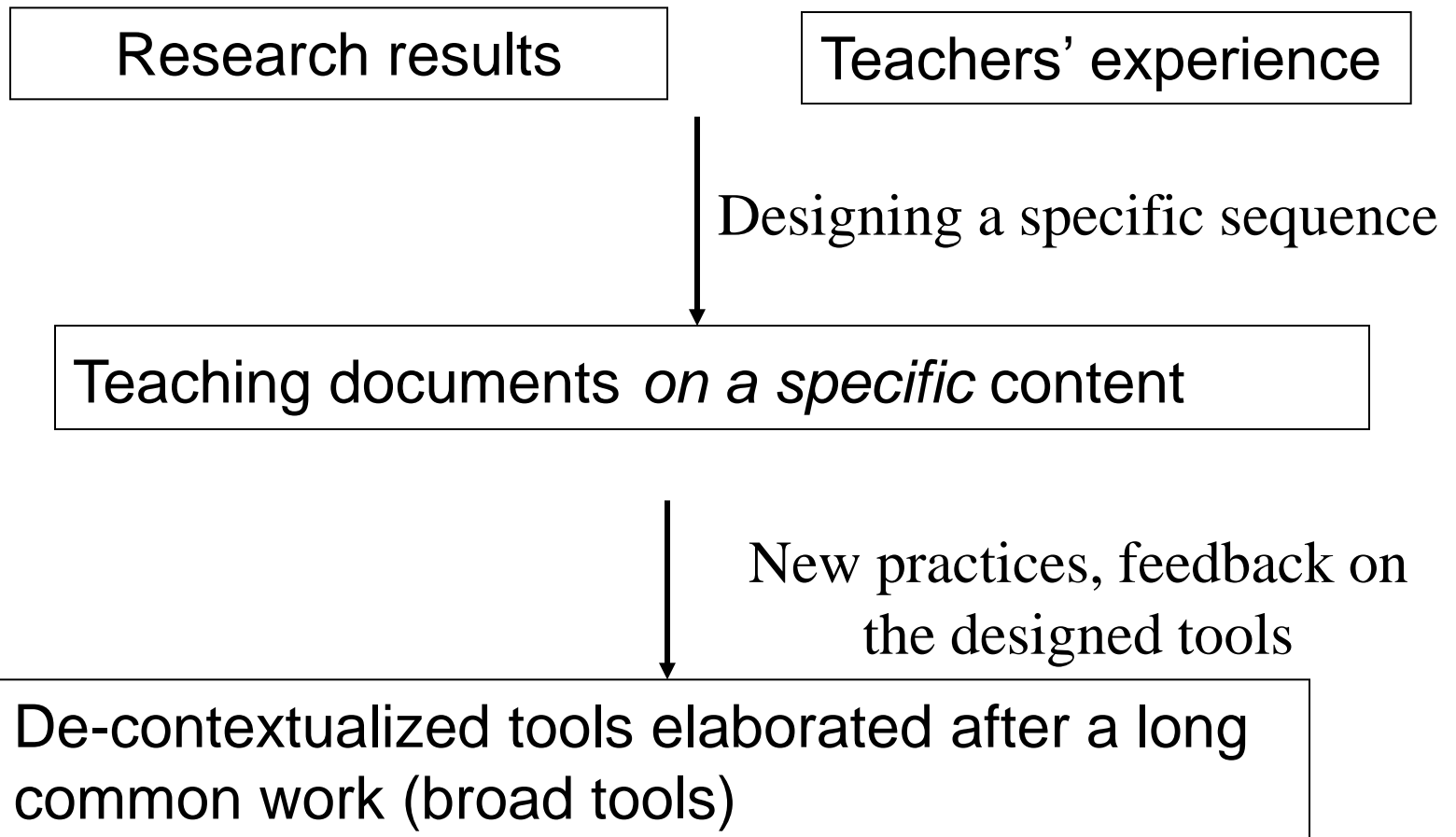


# Who are the designers of PEGASE?

Series of groups of researchers and teachers has worked for more than ten years :

- Putting together complementary expertise
- Designing and using teaching sequences, including comments
- Institutional dissemination ([www2.ac-lyon.fr/enseigne/physique/sesames](http://www2.ac-lyon.fr/enseigne/physique/sesames))
- In service professional development
- Training teachers' trainers

# Different stages in designing teaching resources



# Evolution of modalities of resource design

Disseminating  
(the web sites,  
training, ...)  
with  
continuous  
refinements of  
the resources

1 Designing and testing **teaching sequences** by the groups of teachers and researchers

2 Designing **professional development resources** strongly related to **teaching activities**

3 Making available **design tools** for teachers

- **Pooling** resources designed by teachers
- Creating **processes of refinements**

# Evolution of the design bases

Teachers'  
Expertise and  
Experience

## Research

- Theoretical components on epistemology and learning
- Research results on students' learning



- Design-based research
- Intermediary theory
- Design tools
- Research results on classroom practices

# Two types of co-elaborated resources

- Associated to a specific teaching content (*sequence*)
  - **Activities for the students, comments for teachers**
- Transversal :
  - **1 - Tools on classroom management**
  - **2 - Tools proposing what the teachers should have in mind constantly : *Teaching background and frame***
  - **3 - Tools associated to typical situations (advantages and risks of these situations): *markers***
  - **....**

# Main Bases from the beginning

- Favouring the students' construction of meaning
- Favouring students awareness of their learning
- Taking into account students' prior knowledge (everyday and science knowledge)
- Making explicit the main components of how science works (modelling)
- Distinguishing science knowledge from everyday knowledge to help students to construct relevant links
- Taking into account language (everyday and physics) and the relationships between natural language and representations



# The different types de resources

Collaboration between  
teachers and  
researchers

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Teaching sequences with  
comments and video clips of  
class)

Resources making the choices  
explicit and giving helps to  
teach the sequences



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sont requis pour visionner cette image.

# Part: Teaching

THEME: L'Univers en mouvement et le temps  
France – Niveau 10 (Seconde) – Physique



Partie n°1

- Activité 1
- Activité 2
- Activité 3
- Activité 4
- Activité 5
- Activité 6
- Exercice 10
- Exercice 11
- Exercice 12
- DS 1
- Modèle 1

Partie n°2

Partie n°3

Partie n°4

Partie n°5

Activité 1: Représentation d'un objet par un point ( introduction des paragraphes 1. et 2. du modèle)

## Text of the activity to be given to the students

Quelles informations perdez-vous sur le mouvement si vous représentez chacun des objets suivants par un point particulier ?

Objet	Point représentant l'objet	Informations perdues (aucune ou préciser lesquelles)	Informations conservées (aucune ou préciser lesquelles)
Balle de tennis	Le centre de la balle		
Roue de vélo	Le centre de la roue		
Luge quand elle glisse	Le point d'attache de la ficelle		

A la fin de l'activité, coller dans le cahier les paragraphes 1 et 2 du modèle du mouvement qui vous seront remis.



But



Préparation



Comportement



Corrigé

des élèves

## Comments



Version  
intégrale  
imprimable



Se former



Ressources liées

## Professional development resources

- 1 : l'élève n'est pas explicitement invité à se référer à un modèle
- 1 : situations élémentaires permettant d'introduire le point de vue du physicien
- Coopération et argumentation

# Comments in the teaching part



“Aim”



“Running the task”



“Comments on the knowledge”



“Information on students’ behaviour  
(including videos)”



“Providing answers”

# Teacher development

- ☞ *A - Toile de fond de l'enseignement*
  - Giving landmark to student on knowledge
  - Predicting and taking into account some student' difficulties
  - Managing the class
- ☞ *B - Balises des situations d'enseignement*
  - Landmark '*place*' the model
  - Landmark *Type of experiment, real, evoked or simulated*
- ☞ *C - Conceptions*
- ☞ *D - Outils de diagnostic et d'évaluation*

# Examples of relationships between the parts “teaching” and professional development

- <http://www.inrp.fr/pegase-en/>