

“How to improve underachievement in Maths and Science among pupils from disadvantaged backgrounds”

Laurence Trofimoff
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The French mathematical school paradox

A long history of French mathematicians

François Viète (1540 - 1603)



Pierre de Fermat (1606 - 1665)



Rene Descartes (1596 - 1650)



Blaise Pascal (1623 - 1662)



The secret Bourbaki group (1935 - ...)

France, a collection of Fields Medal

- Most successful country within EU (12 out of 13)
- #1 & #2 top universities that have graduated Fields medalists are French



Cedric Villani (2010)

“Science is written in mathematical language. Computer science, physics, chemistry, biology, economics, medicine, social sciences ... The applications are increasing. Mathematics is invited everywhere”

Reality in schools

x 1.3

Students with
maths trouble
(over the last
6 years)

x 0.8

Good
students in
maths (over
the last 6
years)

74%

scared about
grades

25th

France PISA
score (out of
65 countries)

1/5

students with
very low math
level in junior
high school

How do we teach maths in France

A French student is supposed to learn how to (curriculum)

- Test & manipulate
- Translate in mathematical language
- Calculate
- Plot
- Think and demonstrate
- Communicate



My strategy

“Board therapy”

Send students to explain in front of everyone



If you can explain, you understood!

Mutual help

Highly promoted



ICT

Natural linkage
Used for years (calculators...)



Source: www.lancsngfl.ac.uk

The background is a solid pink color. In the top right corner, there is a decorative arrangement of geometric shapes: a light pink triangle pointing down-left, a dark pink square, a light pink triangle pointing up-right, and another light pink triangle pointing down-left.

Labomep

Interacting tool to learn tables

Table attaque n°1

7 x 6

8 x 10

6 x 6

6 x 3

8 x 7

8 x 3

8 x 5

6 x 5

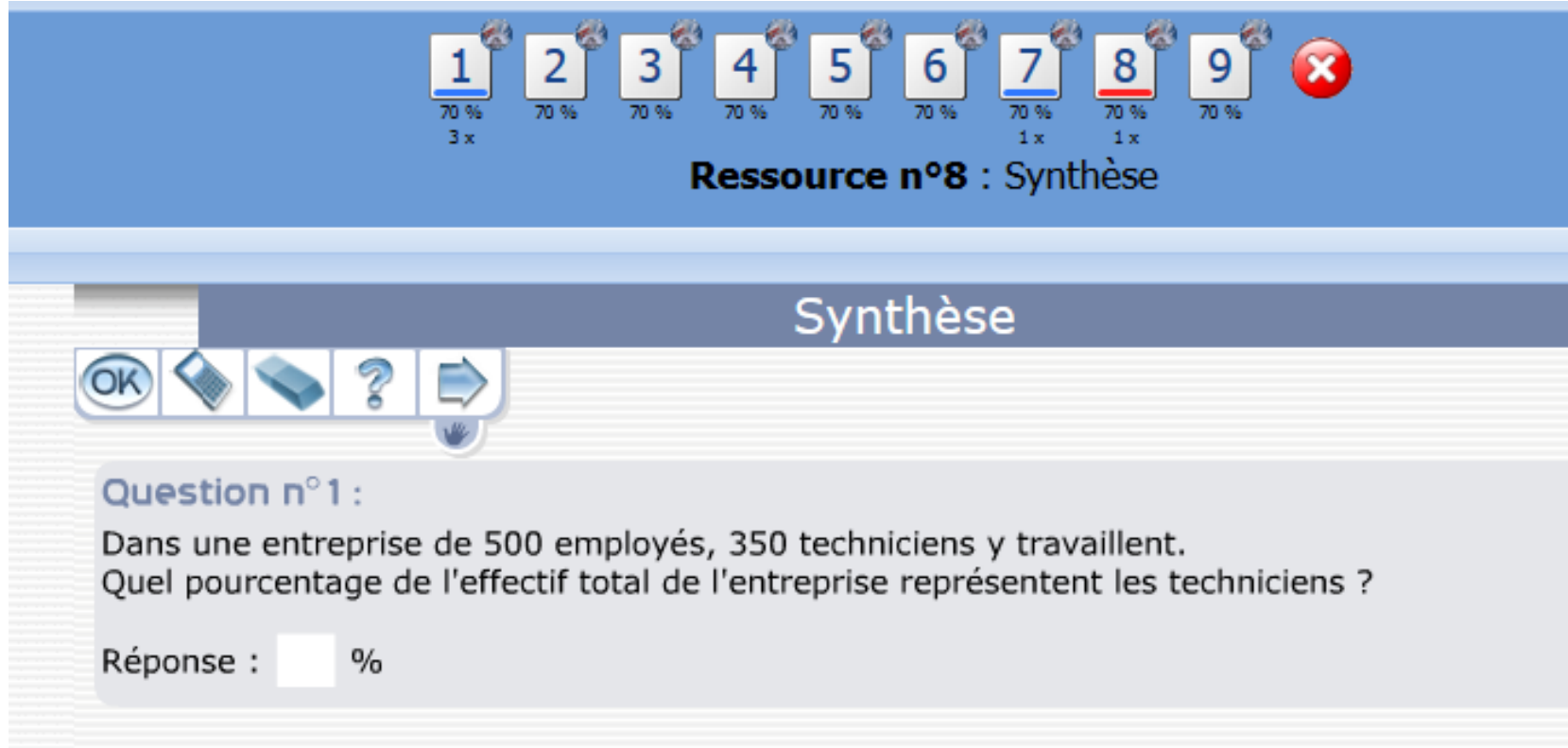
6 x 10

8 x 9

8 x 2

72

Interacting tool for basic exercises






The interface features a top navigation bar with nine numbered buttons (1-9) and a red 'X' button. Each button displays '70 %' and a count (e.g., '3 x' for button 1, '1 x' for buttons 7 and 8). Below this bar, the title 'Ressource n°8 : Synthèse' is centered. A dark blue bar below the title contains the word 'Synthèse' in white. Underneath is a toolbar with icons for 'OK', a calculator, a eraser, a question mark, and a right-pointing arrow. The main content area contains the text for 'Question n° 1' and a response input field.

1 70 % 3 x
2 70 %
3 70 %
4 70 %
5 70 %
6 70 %
7 70 % 1 x
8 70 % 1 x
9 70 %

Ressource n°8 : Synthèse

Synthèse

OK   ? 

Question n° 1 :
Dans une entreprise de 500 employés, 350 techniciens y travaillent.
Quel pourcentage de l'effectif total de l'entreprise représentent les techniciens ?

Réponse : %

Tracking students' grades

ANDRE Sofyan (4E1)

1 - Problèmes	5/10		mar 8 nov	12 h 41	11 min 45 s
1 - Problèmes	9/10		mar 8 nov	12 h 53	6 min 22 s
2 - Compléter un tableau (produits en croix)	10/10		mar 8 nov	13 h 01	4 min 47 s

BRUNEL Bastien (4E1)

1 - Problèmes	10/10		mar 8 nov	13 h 07	7 min 51 s
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COHEN Mathilde (4E1)

1 - Problèmes	8/10		mar 8 nov	12 h 41	35 min 28 s
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CUNY Diane-Eleonore (4E1)

1 - Problèmes	1/10		mer 9 nov	12 h 46	23 s
2 - Compléter un tableau (produits en croix)	1/10		mer 9 nov	12 h 49	13 s
3 - Représentations graphiques	1/5		mer 9 nov	12 h 50	41 s
4 - Appliquer un taux	5/5		mer 9 nov	12 h 52	4 min 00 s

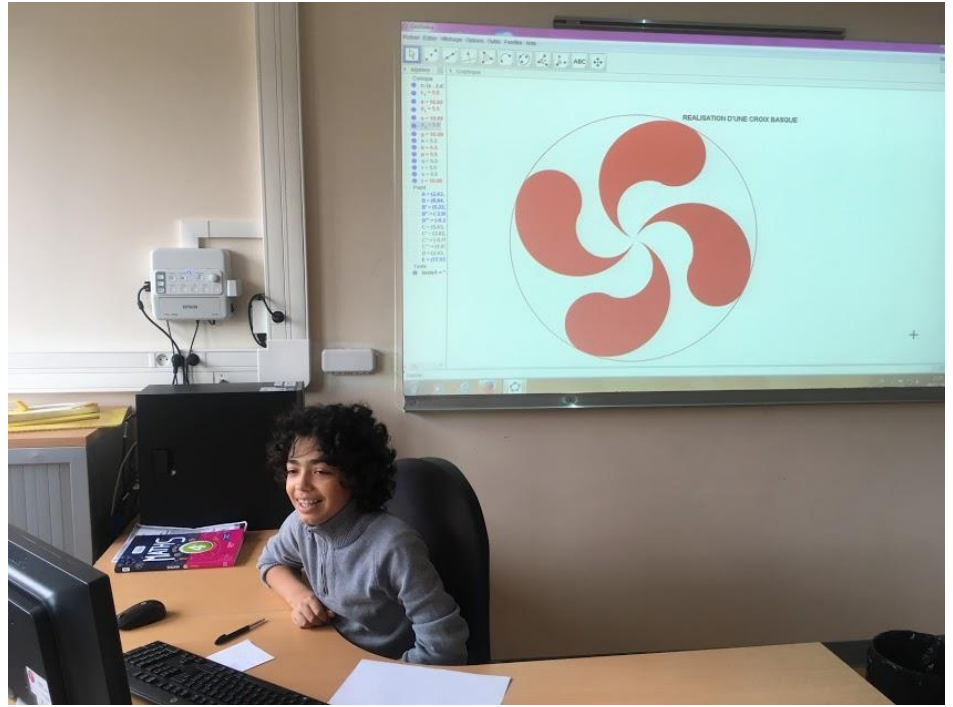


Geogebra

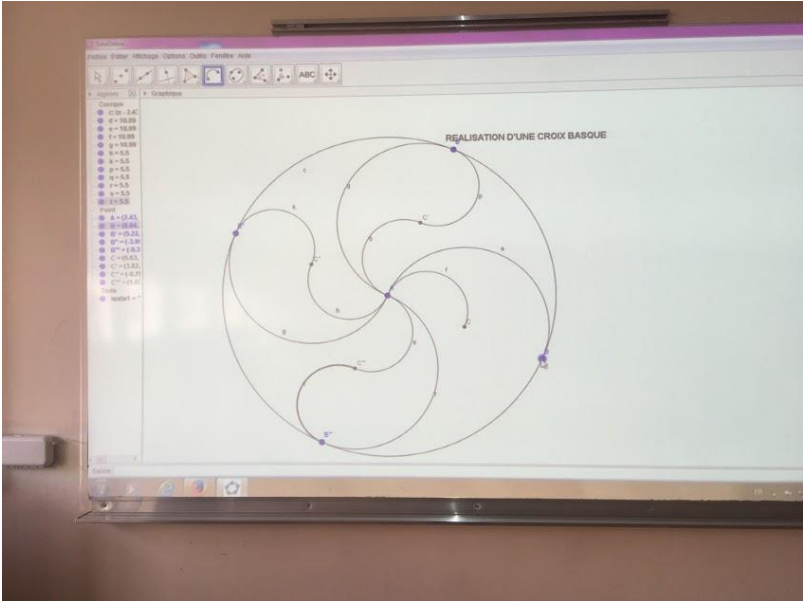
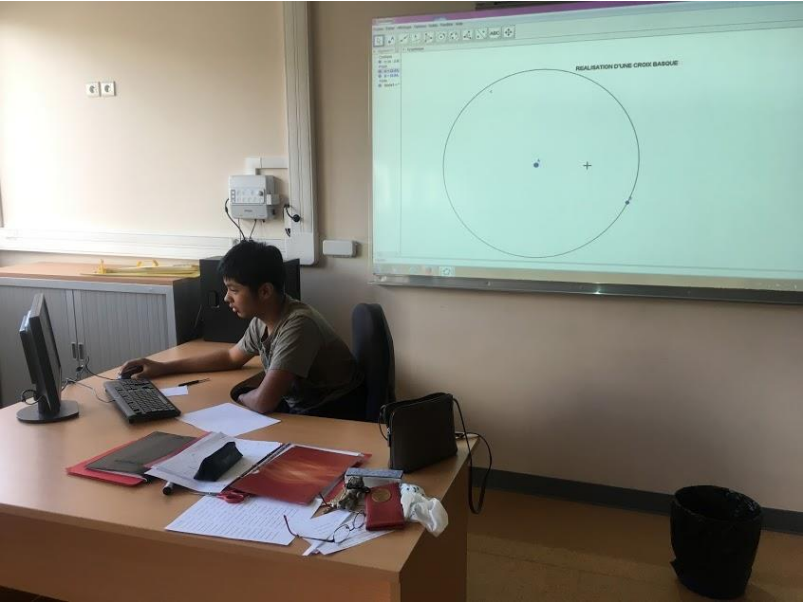
Why students love it

- Dynamic
- Interactive
- Fun

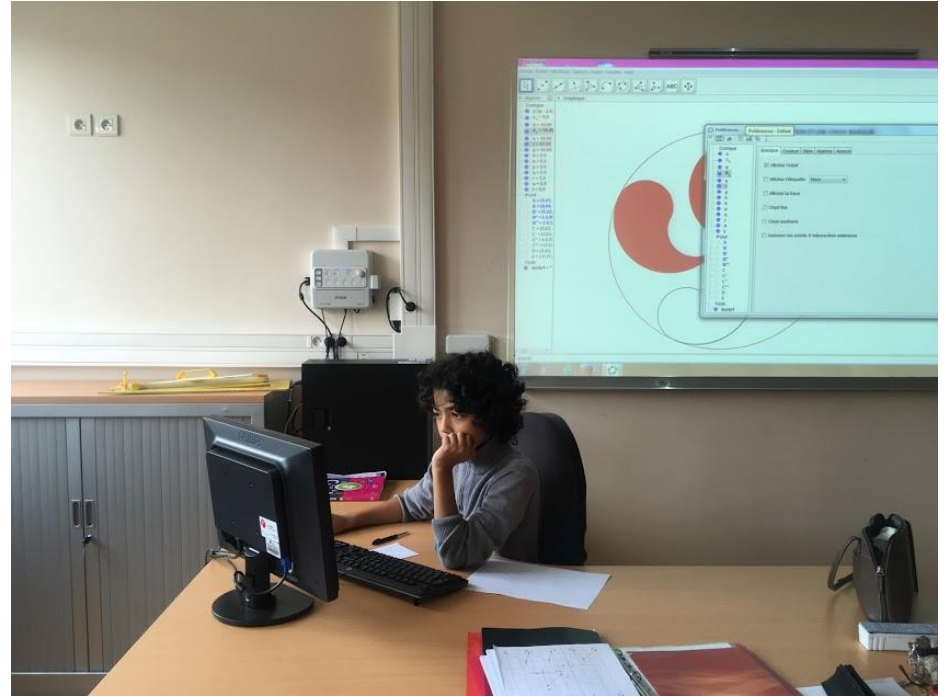
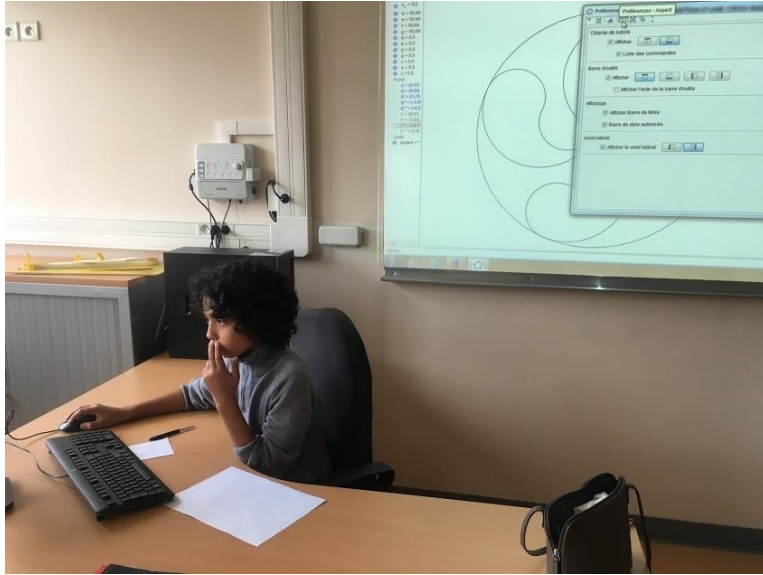
GeoGebra



First challenge : draw a Basque cross



Second challenge : Color the cross





Scratch

Scratch : a creative learning community

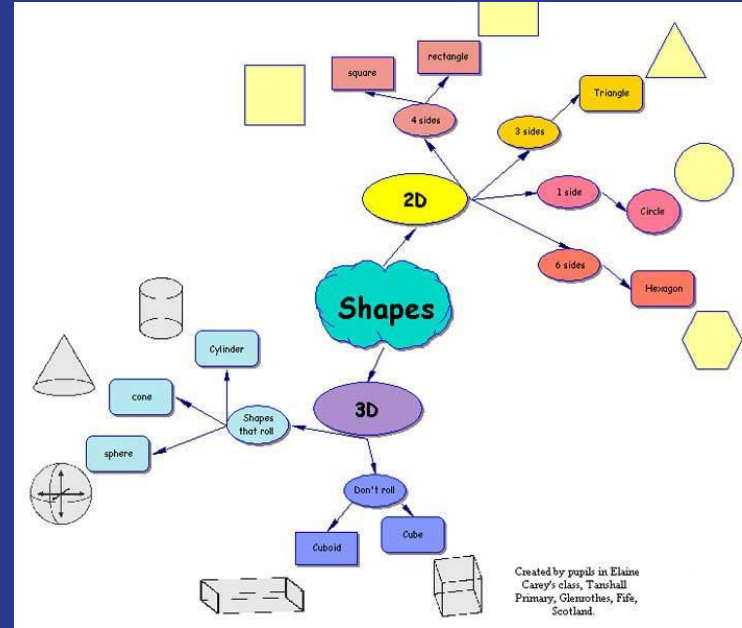


- MIT software
- Learn to code, Code to learn
- Essential skills for 21st century
- Intuitive approach for students (color coded, drag and drop, code blocks ...)
- Multilingual
- Products
 - Stories
 - Games



Mind map

Different approach
Created with students
Photographic memory



Source: www.lancsngfl.ac.uk

Math contests & challenge

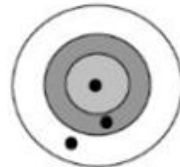
Nationwide competitions

- Eurékades
 - Kangourou
 - Drôles de maths
 - Castor informatique
 - Olympiades
-

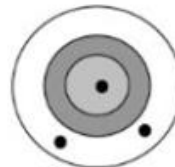
Eurekades (Mixed level teams)

Problème 1 : les fléchettes

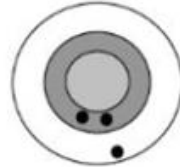
Quel score est obtenu dans la dernière cible ?



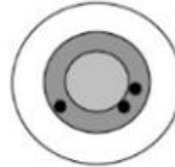
24 points



19 points



16 points



?

Drôles 2 maths (Entertainment & Charity)

Question n°1

118 / 118 points

0 succès

0 oubli(s)

0 échec(s)

Ton témoignage !

Tous les jours Alba la fourmi géante nourrit son petit homme apprivoisé qu'elle élève dans un cube de côté 2m. Alba mesure 3 fois le côté du cube.

Quelle est sa taille ?

A 2m

B 3m

C 6m


D 9m

E 3 500km

Castor informatique



Antennes

Version 


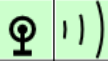







Version 

Version 

Cliquez sur les cases **blanches et grises** de la grille pour y placer des antennes, afin que toutes les cases **blanches** soient couvertes par des ondes.

Les ondes des antennes ne doivent pas se superposer.

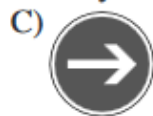


Kangourou



1 Lequel de ces cinq panneaux a deux axes de symétrie ?

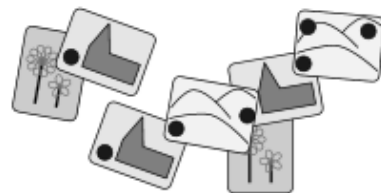


2 Léonard coupe une pizza en quatre. Puis il coupe chaque quart en trois. Quelle fraction de la pizza entière représente chacune des parts ?

- A) un tiers B) un quart C) un septième D) un huitième E) un douzième

3 Sur le réfrigérateur, 7 gros aimants (●) tiennent des cartes postales. Combien d'aimants au maximum peut-on retirer sans qu'aucune carte ne tombe ?

- A) 1 B) 2 C) 3
D) 4 E) 5



Link Maths to daily life

Open questions

Bring taste for research



Why do bees build hexagonal cells?



How many colors are needed to color a geographical map on a sphere, so that two adjacent countries are always in different colors?

Conjecture of Syracuse :

- take any whole number superior to 2.
- If even, divide by 2 ,if odd number, multiply it by 3 and add 1.
- And repeat it again and again





Questions