

# Recent curricular evolutions

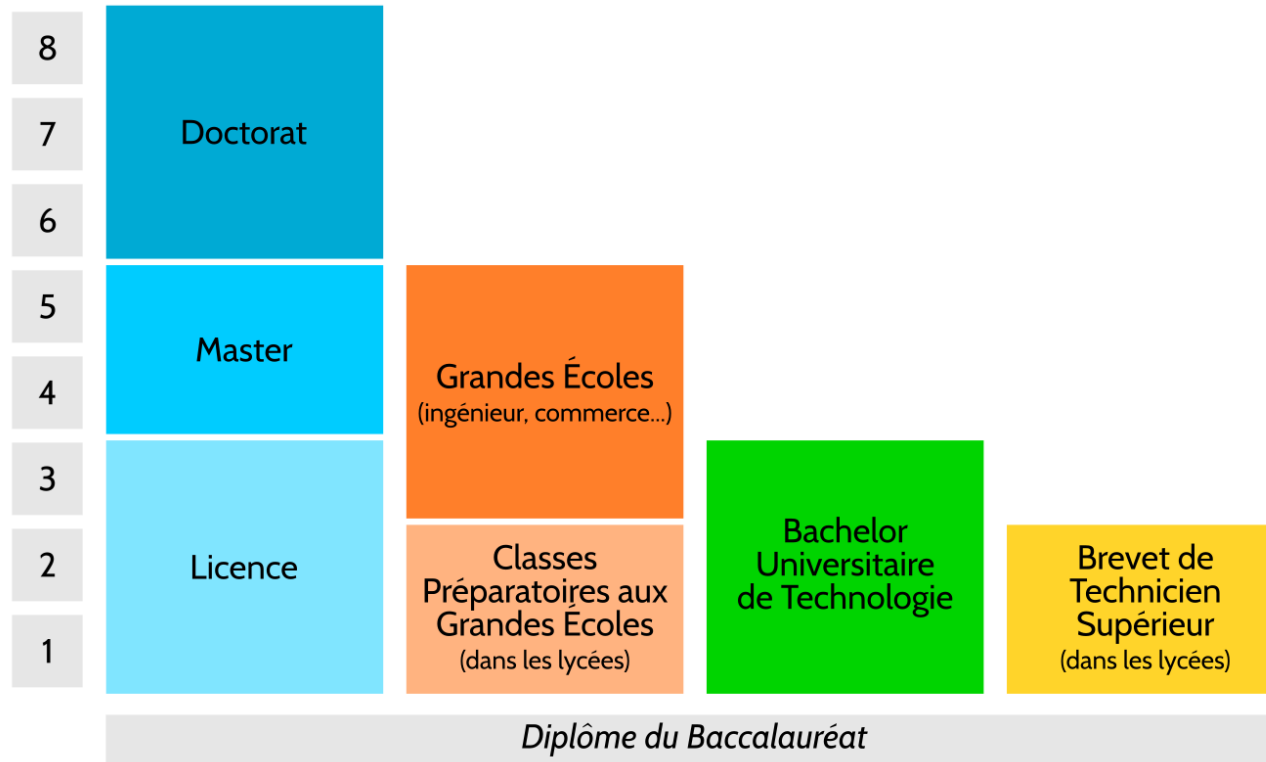
M. Artigue, S. Modeste

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# Structure of the French educational system

Grade	Âge	Cycle	Niveau scolaire	Établissement
15	17-18		Terminale	Lycée Général et Technologique
14	16-17		Première - 1 <sup>o</sup>	
13	15-16		Seconde - 2 <sup>o</sup>	
12	14-15	Cycle 4	Troisième - 3 <sup>o</sup>	Lycée Professionnel
11	13-14		Quatrième - 4 <sup>o</sup>	
10	12-13		Cinquième - 5 <sup>o</sup>	
9	11-12	Cycle 3	Sixième - 6 <sup>o</sup>	Collège
8	10-11		Cours Moyen 2 - CM2	
7	9-10		Cours Moyen 1 - CM1	
6	8-9	Cycle 2	Cours Élémentaire 2 - CE2	École Primaire École Élémentaire
5	7-8		Cours Élémentaire 1 - CE1	
4	6-7		Cours Préparatoire - CP	
3	5-6	Cycle 1	Grande Section	École Maternelle
2	4-5		Moyenne Section	
1	3-4		Petite Section	

# Structure of the French educational system



# Curricular reforms (2000-2020)

- ▶ 2000: Reform of general high school piloted by the CNP (National council for programs)
- ▶ 2002: Reform of elementary school
- ▶ 2005-2006: **Fillon law** and dissolution of the CNP – Common core of knowledge and competencies – Reform of middle school
- ▶ 2008: Reform of primary school
- ▶ 2009-2010: Reform of vocational high school (2009) & Reform of general and technological high school (2010)
- ▶ 2012: Creation of the CSP (Higher council for programs)
- ▶ 2015: **Peillon law** – New common core of knowledge, competences and culture
- ▶ 2015: Reform of kindergarten
- ▶ 2016: Reform of elementary school and middle school
- ▶ 2018-2020: **Blanquer law** – Reform of high school and baccalaureate– Reform of access to tertiary education

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# Curricular reforms (2000-2020)

- ▶ 2018-2020: Blanquer law – Reform of high school and baccalaureate  
Reform of access to tertiary education
- ▶ Mathematics in the general path of high school:

Seconde	Mathematics (4h)			
Première	Mathematics specialty (4h)			Only in « sciences teaching »
Terminale	Mathematics specialty (6h) + expert mathematics (3h)	Mathematics specialty (6h)	Complementary mathematics (3h)	Only in « sciences teaching »

# Algorithmics, programming and computer science

- ▶ 1999: creation of the CREM, which recommended in 2001 the introduction of some computer science teaching in mathematics education
- ▶ 2004-2005: introduction of algorithmics in mathematics for the L series (Humanities)
- ▶ 2009: generalization of algorithmics in mathematics for all series and all levels of highschool
- ▶ 2012: creation of the ISN specialty in *terminale* (Informatics and Digital Science)
- ▶ 2016: Entrance of computer science in the elementary school curriculum  
Entrance of of Algorithmic and programming in middle school (in mathematics and technology)
- ▶ 2019: Selection of Python as the language for algorithmics in high school mathematics  
Creation of SNT *Digital sciences and technology* in the common core for the *seconde* level  
Creation of the specialty NSI *Digital and Computer Sciences* in *première* and *terminale*  
Creation of a specific NSI CAPES

# The Villani-Torossian Commission

With excerpts of the interview of Alice Ernoult, former president of the APMEP (Association of mathematics teachers of public education) and member the Villani-Torossian Commission by Michèle Artigue.



# The Villani-Torossian Commission

- ▶ Created in October 2017 at the request of the Minister of National Education, Jean-Michel Blanquer, in the light of the deteriorating results of French students to national and international evaluations.
- ▶ Chaired by the mathematician and deputy Cédric Villani, and the general inspector of national education Charles Torossian.
- ▶ Including 21 members: teachers, researchers, school principals, inspectors and educational managers.

# The Villani-Torossian Commission

- ▶ Four axes of work set out in the mission statement:
  - ▶ to determine the most effective practices by drawing on international research
  - ▶ to clarify the place of computation in mathematics education
  - ▶ to make recommendations for annual acquisition levels
  - ▶ to formulate proposals for a better connection between extra-curricular and school-based activities



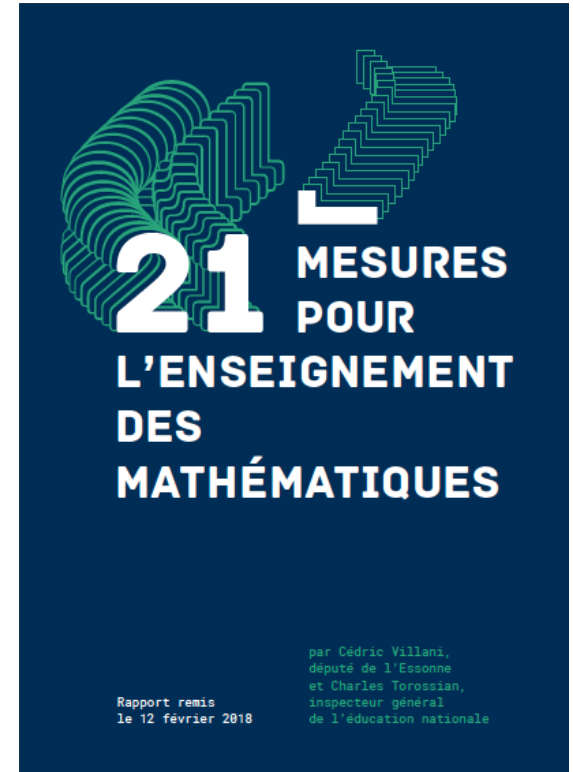
# The Villani-Torossian Commission

Including teacher education and professional development as a major axis of the reflection.



# The Villani-Torossian Commission

- ▶ An intensive collective work during three months, including auditions, round tables involving about representatives of the so many actors of mathematics education.
- ▶ Leading to a report structured around 21 measures for the teaching of mathematics and proposing an action plan to implement these measures.



# The Villani-Torossian commission

The most important measures according to Alice Ernout, and her opinion about their implementation.



# The Villani-Torossian commission

Some achievements concerning teacher training:

- ▶ About 1200 mathematics referents for districts created in one year, who accompanied more than 3000 constellations of 6 to 8 school teachers in 2019-2020
- ▶ 240 mathematics laboratories created in high schools

However, serious difficulties in ensuring the institutional conditions and means necessary for the intended collective work of teachers



# Comments and reflections

- ▶ An accumulation of curricular changes in the last two decades
- ▶ Some continuous lines of evolution regarding algorithmics, programming and computer science, statistics and probability, modelling and interdisciplinarity
- ▶ However:
  - ▶ a too strong dependence on political changes, insufficient anticipation of possible effects of the reforms planned and evaluation of their implementation, insufficient support for teachers and consultation of them
  - ▶ many worries also resulting from the current high school reform
- ▶ A strong commitment of the French mathematics community at large to teaching issue, to face the difficulties and the complexity of the situations