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Teaching math through their history in primary and secondary schools (8-11 years)

Abstract

The main purpose of the presentation is to describe the orientations of a research project of nine teams spread over the French territory, conducted within the framework of the French Commission Inter-IREM "Epistemology and History of Mathematics". This project started with the last reform of the school in France in September 2015. A new cycle of learning has been created in the curriculum - the *Cycle 3* - integrating the last two years of primary school (8-10 years) and the first year of "*college*" (10-11 years). In addition, in the current official instructions, we can read: "The historical perspective of certain knowledge (positional number system, appearance of decimal numbers, the metric system, etc.) contributes to enrich pupils' scientific culture" [La mise en perspective historique de certaines connaissances (numération de position, apparition des nombres décimaux, du système métrique, etc.) contribue à enrichir la culture scientifique des élèves. (*Bulletin Officiel Spécial* 11 du 26/11/15, Cycle 3, Mathématiques, p.198)]. This is an additional motivation for the working group composed of researchers, teacher trainers and teachers. Nevertheless, we show that the historical perspective is not just a cultural approach but it can also make sense in mathematics education.

This research project is original because it is for schoolteachers whose versatility is seen as a source of wealth, for middle schoolteachers, specialists in their discipline and inclined to interdisciplinary projects, and finally for teacher trainers (initial teacher training and continuing training).

Our working group has experimented with classroom activities to integrate a historical and/or epistemological perspective into math teaching and with session of teacher training (school teachers or math teachers). We have also enriched most of the experiences with references to recent didactic works on the subject. All these activities are based on original documents of social, cultural and philosophical history or material artifacts (machines and abacus). They cover different teaching domains: magnitudes and measurement, numerical and geometric. All historical periods are concerned from Antiquity to the present.

During this short presentation, we will try to specify the guidelines of the research project, the framework of experiments and we will give some examples of work done by pupils in the classroom.

References

É. Barbin (2006), « Apports de l'histoire des mathématiques et de l'histoire des sciences dans l'enseignement », *Tréma* 26, pp. 20–28. [https://doi.org/10.4000/trema.64]

M. Moyon (2012) « Penser les mathématiques à travers leur épistémologie et leur histoire: un enjeu de/dans la formation des maîtres », in Dorier J.-L., Coutat S. (Eds.), *Enseignement des mathématiques et contrat socia : enjeux et défis pour le XXI^e siècle – Actes du colloque EMF2012* (GT4), pp. 641-652. [http://emf.unige.ch/files/5315/1386/2795/EMF2012GT4MOYON.pdf]

M. Moyon, F. Plantevin and R. Chorlay (2018) « Enseigner les mathématiques par leur histoire au cycle 3 »,in *Actes du colloque Mathématiques en Cycle 3*, Poitiers: IREM de Poitiers, 21p.

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