

Dominique Tournès, Nathalie Daval
University of La Reunion, France
dominique.tournes@univ-reunion.fr, nathalie.daval@univ-reunion.fr

Michel Mouyssinat
Institut Francophone International, France
mmouyssinat@hotmail.com

Learning arithmetic with counting boards and jetons

Abstract

The workshop reports on some teaching experiments which were carried out in France in elementary school classes (pupils from 7 to 9 years old) during three academic years (2014-2015, 2015-2016 and 2016-2017). The common point of student activities was the use of historical counting boards and jetons for learning the decimal numeral system and related calculation techniques.

Counting boards and jetons were one of the main instruments of calculation in the West until the end of the 18th century. Not without difficulty, they were replaced progressively, by the written calculation methods coming from India and using Arabic numerals, before the latter were gradually automated originally by means of mechanical calculators, and subsequently by electronic calculators. This crucial place occupied by counting boards and jetons in the history of calculation led us to question the relevance of the use of these ancient material artifacts for the development or consolidation of elementary numerical apprenticeships.

In the first part of the workshop, after a short historical presentation about counting boards, participants will manipulate various models of counting boards and discover how to manage with them the simplest calculations (addition, subtraction, multiplication). In the second part, classroom experiment reports, student work, and videos will be shown as a starting point for a pedagogical discussion.

References

- Dugain C. & Guillotin, M.-J. (2015). *Cycle 3: Remédier à une construction non-opérationnelle de la numération à l'aide d'un abaque historique*. Mémoire de master MEEF, Université de la Réunion.
- Grondin A. & Grondin S. (2016). *L'utilisation des outils de calcul et des numérations issues des civilisations anciennes à l'école élémentaire*. Mémoire de master MEEF, Université de la Réunion.
- Poisard C. et al. (2016). Les ressources virtuelles et matérielles en mathématiques: des instruments pour travailler en classe sur le nombre, la numération et le calcul. *MathémaTICE* numéro spécial 51.
<http://revue.sesamath.net/spip.php?rubrique135>
- Ries, A. (1518). *Rechnung aff der linihen gemacht durch Adam Riesen vonn Staffelsteyn*, 2nd ed. 1525, Erfurt: Mathes Maler.
- Schärli A. (2006). *Compter du bout des doigts. Cailloux, jetons et bouliers, de Périclès à nos jours*. Lausanne : Presses polytechniques et universitaires romandes.
- Trémoulu M. (2017). *L'abaque à jetons: quel impact dans le domaine de la numération et du calcul au cycle 2?* Mémoire de master MEEF, Université de la Réunion.
- Trenchant, J. (1602). *L'arithmétique de Jean Trenchant, departie en trois livres. Ensemble un petit discours des Changes, avec l'art de calculer aux Getons*. Lyon: Degabiano & Girard.
-
-