

First name :

Kristín

Last name :

Bjarnadóttir

Personal title :

professor emerita

Affiliation :

University of Iceland

Preliminary title :

Textbooks in mental arithmetic – obstacles and attitudes of influential persons

Abstract :

28 februari 2017 om 11:57

---

The paper describes two Icelandic arithmetic textbooks, published respectively in 1780 and 1911–14, both written at the beginning of an era when enhancing general education was a matter on the agenda of restoring the Icelandic society after nature disasters. Both textbooks emphasized mental arithmetic. Both books became under criticism from influential persons, either grounded in malice due to other conflicts, or by lack of mathematical insight. Creating textbooks was a difficult but also vital task in an exceptionally sparsely populated country speaking an own unique language. Another obstacle was that the main printing press printed until 19th century exclusively religious books. Many works, even arithmetic textbooks, went from home to home in manuscripts. Iceland was part of the Danish realm from the end of 14th century and Icelandic students had priority for grants at a student residence in Copenhagen after 1628. Enlightenment influence was strongly felt among the Icelanders there from the 1770s onward. The Danish authorities felt responsibility towards Iceland which suffered various calamities during the 18th century. In the period 1770–1780 a great number of informative printed texts were distributed free in Iceland. The two first substantial mathematics textbooks, written by young Icelanders in Copenhagen, were published with financial support by proponents of the Enlightenment. The first textbook was *Greinileg vegleiðsla til talnalistarinnar* [A clear guide to the number art] by Ólafur Olavius (1780), modeled on the German textbook *Demonstrative Rechenkunst* by Christlieb von Clausberg (1732, 1748, 1762) and a Danish textbook by Chr. Cramer (1735, 1755, 1762, 1766, ...), both

well-known and repeatedly published books. What characterized Olavius's book were a great number of advice and exercises on mental arithmetic. It was the author's sincere hope that the book would be suitable for teaching at the two secondary schools in the country. G. Pálsson, an influential ex-headmaster, said in a letter to the present headmaster of one of the two schools in the country that he read the foreword of the book and was not impressed, it was pretentious and affected. Further research reveals that Pálsson did not read the book itself, while financial complications due to Olavius's import of a printing press, intended to print secular material, caused Pálsson's negative feelings towards Olavius. In 1880, during an extremely cold period with pack ice surrounding the country, law on education in writing and arithmetic required homes to teach children the four arithmetic operations in whole numbers and decimals, while primary school legislation was not enacted until 1907. Both gave spark to textbook publications. One of them was *Reikningsbók* [Arithmetic], by Sigurbjörn Á Gíslason (1911–1914), the first comprehensive arithmetic series for primary school level up to lower secondary level, featuring equations, exponents and logarithms. Gíslason also nurtured mental arithmetic. The secretary of education, Jón Thorarinsson, when asked in 1913 to recommend the textbook for grant from the National Budget, refused. In his review, he mentioned volume 5 where he found the mental arithmetic far too difficult and randomly arranged. He remarked in particular an exercise where the student was asked to compare 4‰ of 9000 and  $4\frac{1}{2}$ ‰ of 8000. Furthermore, the whole series was too expensive.

However, it survived into the 1930s when it had been legalized as a textbook. In 1938, another series, which favored training written skills, was chosen for free distribution in primary schools, and thus hindered distribution of other textbooks. The two arithmetic textbooks of 1780 and 1911-1914 will be analyzed with respect to theories on pedagogical value of mental arithmetic as well as discussions about the usefulness of mental arithmetic in a society where paper was expensive and scarce. Effects of negative attitudes expressed by influential people will also be discussed, e.g. on the textbooks' reputation and distribution, as well as counter effects.