Hélder Pinto
CIDMA – University of Aveiro
hbmpinto1981@gmail.com

Teresa Clain
CIDMA – University of Aveiro & Escola
Secundária de Caldas das Taipas, Guimarães
tcostacaracol@gmail.com

Portugal

Histórias com Ciência na Biblioteca Escolar [Histories with Science in the School Library] – a project to bring topics of History of Science to secondary schools in Aveiro (Portugal)

Abstract

O binómio de Newton é tão belo como a Vénus de Milo.
O que há é pouca gente para dar por isso.

Newton's Binomial theorem is as beautiful as the Venus de Milo.
The problem is that very few people are able to realize it.

Álvaro de Campos [heteronymous of Fernando Pessoa]

In this presentation, we intend to present the project *Histórias com Ciência na Biblioteca Escolar* [(Hi)stories with Science in the School Library], a project which brings topics of the History of Science to secondary schools in the city of Aveiro (Portugal). This is a joint project from the University of Aveiro and the Rede de Bibliotecas Escolares [School Libraries Network, a program of the Ministry of Education].

The goal of this project is to join the University and the School Libraries Network in promoting scientific dissemination, namely the research carried out in the University, as well as extending the scientific culture to a pre-university audience. This project is coordinated by Professor António Andrade (Department of Languages and Cultures) and consists of a cycle of nine conferences in the secondary school libraries by several researchers of the University. The themes of these conferences are very diverse and include areas such as astronomy, medicine, botany, literature, physics and mathematics. These conferences are always centered in episodes of the history of science; for instance, botany in the work of the epic poet Camões, the importance of amateur astronomers in the past, the history of syphilis, the importance of the phonograph in Portugal and others. The Group of History of Mathematics participates in this project with two conferences: Portuguese Arithmetic Books in the Portuguese Discoveries (Teresa Costa Clain) and Real Problems – Historical Mathematical Solutions (Hélder Pinto). In this communication, we will present these two conferences in detail.

In Clain's conference, we present the practical arithmetic treatises written in Portugal during the 16th century. According to the traditional model, these treatises are texts of mathematics with a practical vocation and with the objective of responding to the needs of professional training in the commercial world. Commercial arithmetic also became a source and a vector for the dissemination of an important set of problems that would mark the history of knowledge for centuries. In this session, we briefly present the *Pratica d'Arismetica* (1540) by Ruy Mendes and analyse some problems proposed by Bento Fernandes, which show us the ludic side of mathematical knowledge of the time.

Pinto's conference shows several historical examples of real problems that were solved using

mathematics; for instance, how to measure the distance to a ship in the sea (Thales), how to find the size of the earth (Eratosthenes), how to measure the height of a mountain (China), how to measure the sun's altitude (Portuguese instrument), and how to improve calculation with rudimentary calculators. In this conference, as an introduction, several examples that everyone knows about the contents of mathematics are presented, such as percentages (e.g. taxes and store promotions), measuring areas, «reading» schedules and tables and so on (for instance, we highlight to students that even when we use a clock, we are using several mathematical notions - why 17:15 is the same as «a quarter past 5 pm»?).

Finally, note that this project is not only about the contents presented in the conferences but the major goal is to enhance the scientific culture of secondary school students. This is a small step to increase, in the future, the audience that can understand the importance of science and mathematics through the history of mankind.

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