

OLD TUNES, NEW TECHNOLOGY: HOW COMPUTERS MEET HISTORY IN THE MATH CLASSROOM

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Technology and especially computers are essential when teaching and learning mathematics; they influence the mathematics that is taught and enhances students' learning (NCTM 1989,2000). In addition, mathematics educators have long emphasized the importance of integrating the history of mathematics into the curriculum (Arcavi, 1987; Freudental, 1981). The integration of computers and historical aspects contribute to the understanding, interest and enjoyment in learning mathematics.

The poster will demonstrate a teaching topic that combines historical and computational aspects: *The number π and its computation to a desired accuracy* (Hoffmann, 1996), intended for elementary and secondary school mathematics prospective teachers. The calculation of π is characteristic of the history of mathematics in general and, according to Beckmann (1971), "The history of π is a quaint little mirror of the history of man". Its importance goes beyond its historical origin in geometry, and expands into the various fields of mathematics. Calculation of this number has engaged the greatest mathematicians from the dawn of history (Kline, 1972). Today, using computer power, more than 200 billion digits of the number have been extracted.

There exist several numerical methods to calculate π which cover a range of mathematical and computer-science concepts. Each method generates beneficial by-products: Analysis of the effect of round-off errors, rates of convergence (Breuer & Zwas, 1993), probabilistic reasoning, computer simulation (Hoffmann, 2001), the uses of series and so forth. We will show how current technology enables integrating these methods into the school curriculum and review our experience in teaching the topic in teachers' colleges and to university students.

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