## The importance and challenge of incorporating original mathematical texts in the classroom

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## PL - Theme 2

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In teaching mathematics, we do not always convey to students the process of mathematical creation, how mathematical ideas evolve. We believe that mathematical instruction should include introducing students to the genesis of at least some mathematical ideas, lest they think that mathematical ideas or theorems arise spontaneously from privileged minds. One way of doing this is by way of original mathematical texts.

The difficulty of using original texts in the classroom is that not all historical texts or all sources are appropriate to design activities to implement in the classroom. What criteria should be used to select texts? Obviously, there should be some relationship to topics of the curriculum. Surely, our preferences will also play an important role, but no matter how interesting a text may be to us, we must think about how relevant it will be for students to learn the mathematical concepts involved. And how should we use these texts? Is it enough to read and comment on them in class to learn mathematics? For some texts, that may be the case, but for most of them it is necessary to add some guidelines for students to understand and in order to focus on the content we want them to learn. We can choose problems from ancient texts, present them to students and compare the ways they have found solutions with the way the author has resolved them. Or we can give students some excerpts that allow them to follow certain reasoning. Of particular interest are works written in the form of a dialogue, such as Plato's Dialogues and various works from the Renaissance.

In this lecture we will reflect on the importance of the history of mathematics for learning mathematics, specifically, on the criteria for choosing appropriate texts, that is, what characteristics a historical text must have for it to be helpful in learning mathematics. We will discuss how to implement such texts in the classroom, and we will present some examples from different topics and various disciplines such as probability or algebra.

## References

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**Fàtima Romero Vallhonesta** has a degree in Mathematics from the Universitat de Barcelona (UB) and a PhD in History of Science from the Universitat Autònoma de Barcelona (UAB). She worked as a secondary school teacher at the Alexandre Satorras Secondary School in Mataró and then as an Inspector of Education for the Generalitat de Catalunya. These roles were compatible with giving Geometry classes to undergraduate students of Primary Education at the UAB. In addition, she gave Calculus classes at the Escola Tècnica Superior d'Enginyeria Industrial de Barcelona (ETSEIB). Now retired from her main job, she is a member of a Research Group of the Universitat Politècnica de Catalunya (UPC), and also a member of the History Group of the Associació de Barcelona per l'Estudi I Aprenentatge de les Matemàtiques.

Further, she is a member of the Museu de Matemàtiques de Catalunya (MMACA) with which she collaborates in some activities. Her research focuses on the history of mathematics through two main lines of investigation. The first one deals with the algebraization of Mathematics that took place from the 16th to the 18th century, specifically in the Spanish works written at the beginning of this period. The second area of investigation is related to the use of History of Mathematics in the school curriculum in order to find texts which can be instrumental in the learning of mathematical concepts.