

# IDEAS ABOUT MODERN MATHEMATICS AND TEACHER TRAINEES AT LICEU NORMAL DE PEDRO NUNES (1957-1971)

Teresa Maria Monteiro

*Instituto Politécnico de Beja*

*This poster presents a longitudinal analysis of the texts published in Palestra magazine by mathematics teachers, not teacher trainees. In our study we divided in four categories the ideas that were advocated by this magazine: Mathematics and programs; Geometry teaching and axiomatics; Modern algebra and algebraic structures; Teacher training and math didactics. We see a convergence of views on the need for the introduction of modern algebra in programs and math classes; the moderate interest in the geometry axiomatization among pupils; and a paradigm shift in teaching methods, which call for student participation in the learning process and also for the teacher continuing education. **Key-words:** Portuguese mathematics education history, Teacher trainees, Modern mathematics.*

It is important to investigate the history of school subjects (Chervel, 1990). The international movement of Modern Mathematics was felt in Portugal in 1950s and 60s and introduced a change in contents and methods in the teaching of this discipline (Matos, 2006), to which the teacher training had to respond.

We are interested knowing a little better what ideas about modern mathematics and mathematics education circulated at Pedro Nunes Normal Secondary School (*Liceu*). With this objective, we focused on *Palestra* magazine, which was founded by Dias Agudo, methodologist and dean of the *Liceu*. The magazine was subsidized by the Portuguese State. The first number was published in January 1958 and the last one was number 42, published in 1973, which excluded mathematics sections. The last one with a mathematics section was number 41, published in 1972.

The chronological scope of this study is limited by the reopening of the training programs in this *Liceu* in October 1956 (which had been suspended in 1947) and the beginning of José Veiga Simão's mandate, who sets in motion a new reform of the Portuguese educational system. This was preceded by a new training model in 1969, which led to the teacher training reduction from 2 to 1 year.

In our study we divided in four categories the ideas that were advocated by the magazine <sup>[1]</sup>: Mathematics and programs (Calado, 1958; Dantas, 1958; Leote, 1958 and 1964; Silva, 1959); Geometry teaching and axiomatics (Leote, 1958 and 1964; Paulo, 1959 and 1962); Modern algebra and algebraic structures (Calado, 1958; Leote, 1958; Paulo, 1963); Teacher training and mathematic didactics (Calado, 1958; Dantas, 1958; Leote, 1958 and 1964). Leote (1958) argued that teachers should "enjoy and encourage" (p. 37) the creative activity that students possess. He further sustains that the teacher must be an investigator and shouldn't think that concepts that he himself took years to learn are obvious to pupils. Leote and Dantas argued that the heuristic method, although desirable, does not respond to all educational needs. A

real difficulty that those teachers were faced with was the overcrowding in classes, which had 42 students. For Dantas (1958) a problem resided in the "limited time to teach [...]. The pace of discovery is very slow" (p. 99). Dantas cites the conclusions of the Congress of Mathematics Education held in Salvador da Bahia from 4 to 7 September 1955: "All [the methods] are good as long as the teacher leads the student to participate rather than to observe." (p. 101). Calado (1958) warned about the need to "review the scientific recruitment and preparation of teachers of secondary education" (p. 91) in the light of new concepts and language which are intrinsic to modern mathematics. Addressing the Minister of National Education, Pinto Leite, who was present at the Liceu, Calado requested that in the Secondary Schools with teacher training "there should be beginners' courses or seminars on Algebra of the Logic, on the Foundations of mathematics and on Modern Algebra carried out by renowned teachers" (p. 102). Calado argued that these courses should be compulsory for the trainees of the mathematics group and disseminated to all teachers of Mathematics and Physics of secondary education. A response to this desire came to pass with the lessons of Silva (1959).

In our study, we came to the conclusion that there was an upgrading of knowledge and of the presented proposals, just like in the rest of Europe and the United States. With respect to teacher training, though not discordant, the authors refer to different facets of this issue: Gonçalves Calado, Silva Paulo and Sebastião e Silva contribute to scientific education; Furtado Leote and Martha Dantas reflect about the teaching of mathematics. In the *Liceu*, the presence of leading figures of the ministry of education and of the Portuguese State was frequent, including the Republic's President Almirante Américo Tomás, who visited the Liceu in 1959 and 1966. Between 1957 and 1971 we found 50 mathematics teacher trainees in this school and, possibly, they heard these words.

## NOTES

1. Calado: 1958, *Palestra*, 1, 89-105; Dantas: 1958, *Palestra*, 3, 97-103; Leote: 1958, *Palestra*, 1, 37-48; Leote: 1964, *Palestra*, 21, 110-123; Paulo: 1959, *Palestra*, 5, 97-106; Paulo: 1962, *Palestra*, 13, 78-88; Paulo: 1963, *Palestra*, 17, 29-44; Silva: 1959, *Palestra*, 6, Separata 1-66.

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