

## WHAT ALGEBRA SHOULD BE TAUGHT IN TEACHERS' COURSES?

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### Abstract

The debate in Brazil concerning teachers' mathematics courses oscillates between political policies, the scarcity of studies related to the formal training of teachers and new references for this education process. Recent factors that profoundly influence the direction of these discussions include: pedagogical and curricular changes in school education, guided by constructivist principles that have deeply modified the conception of mathematics education; the anachronistic and fragmented character of the curriculum and methodologies deemed valid for teachers' courses. Concerning algebra, questions of relevance arise. After the increasing importance it was given in the sixties as a result of the Modern Mathematics Movement, school algebra gradually lost space and today it is frequently seen as a discipline involving amassing symbols of unknown value. It seems that in-service teachers are not prepared to revert this vision, reflecting the generalized incapacity to define the role of algebra in school mathematics education. Simultaneously, research in Mathematics Education indicates that algebra, as a means of exploring mathematically significant ideas, represents an obstacle for many. This project analyses, from the perspective of higher education, specific challenges involved in the teaching of algebra. But the nature of its question - what algebra should be taught in teachers' mathematics courses? - along with the constructivist principles emphasized in political policies, calls for an investigation into algebra in school education. Examination of official and institutional documents reveals a number of discontinuities between the education of algebra proposed in school education as compared to both: inservice teacher's courses and preservice teachers' courses and, in the latter case, highlights the importance of two subjects: linear algebra and number theory. The research examines these discontinuities concentrating initially on these two topics. The approach adopted involves studies in three parallel and overlapping planes, with multidimensional analyses of the interactions between students, teachers and programmes. A strategy linking diagnostic, intervention and documental research is planned. The analyses within and between these planes initially focussed on the following axes: school education \_ higher education and teacher \_ student. The poster describes work already accomplished, ongoing research and studies planned for the future.

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