ABSTRACT. In this paper we present the way in which language issues have become a relevant factor in research which aims to study the socio-cultural aspects of mathematics education in classrooms with a high percentage of immigrant students. Our research on language issues focuses on two aspects, namely the language as a social tool within the mathematics classroom and the language as a vehicle in the construction of mathematical knowledge. We introduce our problem within this area and provide a rationale for our research methodology, not avoiding its drawbacks, but rather giving examples of the kinds of difficulties we encountered. The paper highlights the integrated nature of the social, cultural and linguistic aspects of mathematics teaching and learning, and illustrates the fact that, even if the mathematical language can be considered universal, the language of ‘doing mathematics within the classroom’ is far from being universal.

THE RESEARCH WITHIN ITS CONTEXT

‘Cal afirmar clarament que el llenguatge no sols és un tipus de comportament social, sinó que és, de fet, la major part del comportament social dels humans, tant que podriem dir que la societat humana és una societat lingüística.’

(L. García, 1999, pp. 5–6)

‘It has to be explicitly claimed that language is not only a kind of social behaviour, but, in fact, the greatest part of the social behaviour of human beings, to such a point that it could be said that human society is a linguistic society.’

In 1997, a project was commissioned to the first of the authors by the Ministry of Education in Catalonia, an autonomous region in northern Spain (capital Barcelona), concerning mathematics teaching in schools with large numbers of immigrant students. The project is funded by a Catalan private education foundation, Fundació Propedagògic, and is concerned with finding more appropriate ways to teach mathematics to immigrant students both in primary and secondary schools.

In recent years, there has been increasing immigration into Catalonia which has led to significant changes in the school population. The immigrant population in Catalonia in 1997 was about 1.4% of the whole population and reaches the 2.3% in Barcelona, where the project has been developed. This is significant because the realities of a multicultural class-
room raise many questions related with issues concerning equity and justice (Keitel et al., 1989). It is important not only because in some schools the percentage of immigrant children is 90% but also because, since immigration is a growing phenomenon, more and more schools and communities will be facing a multicultural reality. Most of the immigrant pupils in our schools come from North Africa (Magreb), but also from other countries in Africa, North and South America, Asia and East European countries. This new situation has focused attention on the inadequacy of the educational provision in schools and classes which can be thought of as highly multicultural. In particular, our educational system is differentially effective for students depending on their social class, ethnicity, language background or other demographic characteristics, as it has been proved to be in other countries (Secada, 1992).

According to the educational administration, the main problem the immigrant students face is that of not mastering the Catalan language, a language with Latin roots and its own grammar. This language is spoken in Catalonia and in other small countries (Andorra) or regions in the world by about six million people. In Catalonia both Catalan and Spanish are official languages. The official language of instruction in Catalan schools is Catalan, but all Catalan people can speak both languages and use one or the other depending on their preferences, mainly related to their social context.

The Catalan educational administration considers that there is no possible regular access to the curriculum before having acquired a high competency in the official language of the learning. The Catalan language programme for non-Catalan students assumes that it is not possible to acquire the language while learning subject matter content. Therefore, to 'solve' the language problem of the newly arrived students the educational administration provides language lessons for 7 hours and a half per week, for six months after their arrival, in regular school hours. These Catalan lessons take place regardless of the fact that the lessons on other subjects keep going on. Therefore, when the students rejoin the regular classes, they may have missed previous sessions, making the required effort to follow the group even bigger. This may seem to the reader, as it seems to us, an inconsistent system.

From the point of view of the educational administration, not knowing the language is the only problem immigrant students face. From our point of view, being such a student within a mainstream school requires a more complex analysis than considering only language factors. In coming to Catalonia, and adjusting to Catalan schools, immigrant students and their families travel very long distances in a multidimensional sense: physical,