

RESEARCH ON MATHEMATICS AND LANGUAGE DIVERSITY: 2000–2010

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The paper presents a critical review of research on mathematics and language diversity in the years 2000 – 2010. To do this review, I selected key peer reviewed international journals in mathematics education and general education for the period 2000 to 2010. The review also included Proceedings of Congresses of the International Group for the Psychology of Mathematics Education, which is the largest annual international mathematics education conference.

Searching for studies on multilingualism in mathematics education opened up to a body of literature comprising different locations, different communities and different approaches. There is no doubt that conducting research in multilingual contexts leads to a number of theoretical and methodological challenges. Hence the search strategy considered all forms of research evidence irrespective of methodological paradigms and ‘correctness’ of ideas. In dealing with this diversity, an effort was made to capture ways of thinking of different

researchers and to report on the research in a way that makes the original evidence as understandable as possible. Obviously, the review includes different kinds of evidence that take into account plan variability, cultural diversity and multiple perspectives. Hence, each study has led to different or similar kinds of claims and ways of investigating the truth.

The purpose of this review is to provide information on what research has been done in the area of mathematics and language diversity. This is done in order to highlight the main findings, advances as well as challenges in this area of study. The limitation of this review lies in the fact that it draws only on research published in English.

The table below illustrates the number of relevant papers identified at the time of writing this abstract, as well as which research approach was used in each paper and the level of education at which the research was undertaken.

Journal	Total	Research approach			Level of education		
		Qualitative	Quantitative	Mixed	Primary	Secondary	Tertiary
ESM (Educational Studies in Mathematics)	10	8	2		5	4	1
JRME (Journal for Research in Mathematics Education)	1	1			1		
MERJ (Mathematics Education Research Journal)	6	5		1	1	4	1
FLM (For the Learning of Mathematics)	5	3	2		2	2	1
International journal of multilingualism	1	1					
PME proceedings (International Group of the Psychology of Mathematics Education)	25	25			9	11	5

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Language and education	2	1		1	2		
Linguistics and education	1	1			1		
International journal of bilingual education and bilingualism	1	1			1		
International Journal of Science and Mathematics Education	1		1			1	
Total	53	46	5	2	22	22	8

Table 1: Research approach and level of education for papers reviewed

General observations and the argument to be presented

The table above shows that a total of 53 papers were published during 2000 to 2010, the period of the review. The maximum number, 25, of papers were in PME, followed by ESM with 10 and MERJ with 6. It is worth noting that ESM published a *special issue* looking at research done in multilingual context in 2007. It was observed that a number of the PME papers were developed into a journal articles. Most of the research was small scale studies conducted in classrooms with less than fifty learners.

The majority of researchers used a qualitative research approach focusing on small group of learners or teachers. There

were only five (5) papers authored by two (2) researchers who used quantitative and mixed approaches respectively. Under the level of education, it is observed that research undertaken at tertiary level recorded the least number of papers. During the presentation I will ask the question why and also indicate the implications of this observation.

Through this review I will argue that while all research in this area of study identifies language as the major determinant of success in mathematics learning and comparative assessment, large-scale and small-scale studies follow disconnected paths and thus seem to be making contradictory recommendations. I will also highlight the paucity of research in this important area of study, its implications and propose areas of study for future research.