

# Chapter 1

## Introduction

This *Topical Survey on Social and Political Dimensions of Mathematics Education-Current Thinking* produced by the Topic Study Group (TSG) 34 is one of the series of the topical surveys associated with the TSGs of ICME 13.

The roots of the *Social and Political Dimensions of Mathematics Education* can be traced to the 1980s, to several seminal developments and publications (Vithal 2003), which gained so much momentum that a special fifth day was added to the ICME 6 programme in 1988, titled *Mathematics Education and Society*. Some 90 presentations were made by mathematics educators from diverse countries, which appeared in a UNESCO publication organized by Damerow, Bishop and Gerdes, and edited by Keitel (1989). This was immediately followed by the first conference on the *Political Dimensions of Mathematics Education* (PDME 1) with the theme of “Action and Critique” (Noss et al. 1990). The PDME 2 (Julie et al. 1993) and PDME 3 (Kjærgård et al. 1995) conferences were later replaced by the *Mathematics Education and Society* conferences, the first of which took place in 1998 (Gates and Cotton 1998) and have continued since then (see Further Readings). This first TSG 34 on the *Social and Political Dimensions of Mathematics Education* in ICME 13 is important in that it represents the mainstreaming of this area of work as a scholarly and ongoing significant activity of the broader mathematics education community.

Right from the start, the members of ICME 13 TSG 34, who are the authors of this publication, ruled out a conventional survey of literature on the social and political dimensions of mathematics education and opted to focus on what they considered five critical areas of the social and political dimensions of mathematics education, which are elaborated below. Furthermore, the team opted to focus mainly on current thinking in those five areas and only to go back in history as far as was needed to contextualize the current issues. As a result, the area of ‘the role of economic and historical factors’ was changed to ‘economic factors behind mathematics achievement’. Each author took primary responsibility for writing one of the sections and for reviewing one section written by another author.

This ‘survey on the state-of-the art’ of the social and political dimensions of mathematics education explores a range of issues within each of the five identified areas.

The first, titled ‘equitable access and participation in quality mathematics education: ideology, policies, and perspectives’, examines the issue of equitable access and participation in quality mathematics education in different contexts and from different ideological perspectives. It starts by identifying the ideological bases of equity and quality and how these are reflected in policies and practices as well as in the perspectives through which mathematics educators view this issue. The section also examines the attainment of the illusive, but sublime, goal of equitable access and participation in mathematics education in three political systems with different underlying ideologies: The USA as a liberal system, Cuba as a Marxist system, and Finland as a social democratic system.

The second, titled ‘distributions of power and cultural regimes of truth’, challenges the apolitical view of mathematics and mathematics education. It argues that through the systematic reproduction of socio-economically, ethnically and gender-based differences in achievement, mathematics education contributes to the development of inequalities in future opportunities for students. It goes further to ascertain the critical role of mathematics education research in addressing key concepts such as mathematical literacy or modelling. It concludes that the contributions on the political nature of mathematics itself provide new insights into the political bias of the mathematics in the classroom.

The third, titled ‘mathematics identity, subjectivity and embodied dis/ability’, explores current research on the political forces at work in identity, subjectivity and dis/ability within mathematics education, showing how emphasis on language and discourse informs this research, and how new directions are being pursued to address the diverse material conditions that shape learning experiences in mathematics education.

The fourth, titled ‘activism and material conditions of inequality’ traces the emergence and development of the notion of activism in mathematics education in the literature theoretically, in research, and in practice. It further points to connections between activism and material conditions of inequality. In particular, the notion of poverty is explicated as it has found expression in research across differently resourced contexts and especially large scale quantitative studies. While this has led to identifying “achievement gaps”, other gaps such as “theory gaps” can be posited. Several issues and implications are explored including other domains such as curriculum reforms and the availability of advancing communication technologies.

The fifth, titled ‘economic factors behind mathematics achievement’, examines the political dimensions of mathematics education through the influence of national and global economic structures. By drawing on Programme for International Study Assessment (PISA) data it looks at patterns of underachievement and learning as connected to levels of social equity in a country and looks at how this might be understood. It further looks into the differential experiences of mathematics for pupils from lower socioeconomic communities and argues that this difference is not

merely random or unimportant. Such differences of experience are systematic and structural with the result of further enhancing social inequity.

In the section on the ‘summary and looking ahead’, the results of our survey are presented. Based on the main findings, the topical survey looks ahead and suggests some ideas and research questions to help move forward the social and political dimensions of mathematics education.

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