

CHAPTER 5

EXPLORING WAYS PARENTS PARTICIPATE IN THEIR CHILDREN'S SCHOOL MATHEMATICAL LEARNING: CASES STUDIES IN MULTIETHNIC PRIMARY SCHOOLS

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1. INTRODUCTION

In industrial and post-industrial societies the process of starting school is, arguably, one of the most significant transitions children make in their development after birth. This is the moment when for the working day they leave the cocoon of the family and are placed in the care of the school, an agency set up by society to manage the next phase of their preparation for their role as adult citizens. Symbolically parents pass responsibility over to teachers, and these professionals become the custodians of key elements of the knowledge and understanding that society requires the children to develop. But parents still retain key responsibilities and continue their emotional ties to their offspring. So all too often the alliance between parents and teachers over children's learning is an uneasy one. Even in areas where teachers might expect to have unchallenged sway, such as the core subjects of the school curriculum, the influence of the home and its local community may remain powerful and may prove to be in competition with the influence of the school. Children's representations of aspects of the curriculum will be affected by what their parents and their teachers say and do and by the degree of consistency and harmony between these key players in their lives and between their actions and their words. In this chapter we aim to explore the specific role of parents in children's experience of one aspect of this transition – the transition between mathematical practices at home and mathematical practices at school.

The chapter focuses on a recent research project on mathematics learning in multiethnic primary schools in England¹. We investigated the experiences of high

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achievers and low achievers from two ethnic groups, White-British and Pakistani-British, in an attempt to understand the dynamic factors that influence individual differences among children from the same ethnic group. On the assumption that children's parents and teachers are likely to play key roles in these social dynamics both were interviewed. In this chapter we analyse the dynamics related to parents. Our interest in investigating the influence of parents in collaboration together grew out of earlier research we had carried out separately with children from home backgrounds that were culturally different from that assumed in their schools. Our starting points included Cline's (1993, 1998) work on the school situation of children with learning difficulties who were learning English as an additional language and Abreu's (1995a, 1995b) research with children from homes where parents practised a type of mathematics that was different from the mathematics of the school. In each case our earlier work had highlighted situations in which the transition between home and school posed particular challenges for the young learner.

In this study interactional effects became salient when the perspectives of both the parent and the child were considered. It appeared that parents both influenced and were influenced by their children's participation in school mathematics. So, in reporting our research we will try to make visible the representations of both parents and children and illustrate how these interact to shape patterns of transition between home and school mathematics. The children who were most successful in mathematics at school tended to have parents who were confident in helping them to manage that transition.

2. BRIEF OUTLINE OF THE THEORETICAL APPROACH

From the outset this programme of research followed a sociocultural approach informed by Vygotsky's (1978) theory, situated cognition anthropological theory (Lave, 1988), social representations and social identity theory (Duveen & Lloyd, 1990). In this approach the mathematics that is practised in distinct social practices is based on forms of knowledge that have been historically produced, transmitted and transformed. Thus its representation has a double character. It is the representation of something (and therefore a cultural tool) and of someone (and therefore seen as belonging to specific social groups) (Duveen & Lloyd, 1990; Abreu 1993; Abreu, 1995a). In adopting this perspective we aimed to explore issues related to the mastering of specific cultural tools that are required in specific contexts of practice. But in addition we aimed to articulate the impact of valorisation and identification processes on the transmission and learning of knowledge.

The notion of valorisation we follow in our studies was introduced by Abreu (1993) to explain the relationship between home and school mathematics in a farming community in rural Brazil. She argued that understanding of how particular social groups learn, use and transmit knowledge requires consideration of the link between knowledge and values. In her view it is the association of mathematical practices with particular social groups that provides the framework for understand-

ing the value groups attach to their own mathematical practices. Social groups are located in particular social orders and do not function independently from the wider society. For example, the yardstick to evaluate and value farming mathematics against school mathematics in Brazil was provided by the access these forms of knowledge gave to individuals in the wider Brazilian society. This meant that social representations of mathematics give the individual understanding of the tools and of the codes to compare and categorise co-existing forms of mathematical knowledge.

The notion of identification aims to explain the emergence of differences between individuals exposed to similar practices. What processes lead individuals who share social representations to participate in quite different ways in the practices that are represented? This is a question about the interface between knowledge as represented in the social sphere and its re-construction in the process of individual development. Duveen and Lloyd (1990) have argued that the re-construction of social representations at a psychological level involves active elaboration of social identities. To explain this agency of the individual they distinguished as components of identity between the knowledge of social semiotic codes (tools and their social value) and the position he or she takes towards them. Positions are by definition evaluative. Individuals explain their positions in terms of how they feel towards something, how much they like it, the importance they judge that it may have in their lives, etc. However, how individuals adopt a particular personal positioning, which then becomes a part of their identity, is an area that needs further investigation.

Next we outline why we see this approach as important in the context of research on how parents support their children's transitions between home and school. The double character of social representations needs to be taken into account when investigating ways in which parents can influence how their child manages the transition between home and school mathematics. Firstly, this requires understanding of their use and/or their preference for specific mathematical tools and the way in which these can influence their children's transition. For instance, do parents tend to use mental or written tools for arithmetical calculations? When they use these tools do they emphasise rote use and memorisation or flexible use and understanding? It is often assumed in the literature that when home practices promote forms of thinking that are similar to the ones required at school, this will smooth children's transition to school and contribute to higher achievement there (Bernstein, 1973; Gallimore & Goldenberg, 1993; Heath, 1983; Tizard & Hughes, 1984). This type of explanation has been supported in various studies of home-school literacies. Recently Gallimore and Goldenberg (1993) reviewed a series of studies in which they had investigated literacy practices in Latino families in which American-born children were being brought up by foreign-born parents. Their observational and interview data convinced them that although members of the family usually valued and were prepared to help the child to engage in literacy activities what they actually did with the best of intentions was not optimal as a support for school progress. They found that a key factor in the way the activities were framed was the parents' representations, or what the authors referred to as 'scripts'. Even when the researchers tried to influence the home activities positively by creating external demands they found that 'as soon as

the parents construe an activity as the “teaching of literacy”, their prevailing conception of literary development is activated, driving the interaction and determining the script-in-use’ (pp. 328–329). For instance, they found that parents overemphasised correct answers (e.g. reading a word accurately) to the detriment of reading for meaning.

Secondly, it is necessary to take into account the valorisation of the social practices. Thus, parents can influence the transition through their selection of the information that they intentionally expose to or hide from their children. In this case the salient aspect of the representation on which they base their actions is a judgement about the value of particular forms of knowledge and the social identities that are associated with them. This explanation is of particular interest in the context of our work where we anticipated that home and school mathematics would be differentiated by both parents and teachers not only on the basis of the mathematical tools used in them, but also in terms of their social status. Goodnow (1988, 1990, 1993) has argued that a failure to attend to the impact of value judgements about the status of different forms of knowledge has stood in the way of the development of clear accounts of children’s learning.

Furthermore, Goodnow (1988) argued that how parents and children negotiate their differences either in knowledge or in positions regarding the social value of an activity depends on ‘two-way influences’. In her view:

‘Parents mark information as having varying degrees of importance. They provide it, withhold it, or frame it on the basis of judgements about value and about the other party’s need, age, or capacity to cope. They are selective in the social messages they pass on. Some they endorse, others they subvert or try to exclude from the child’s awareness. Such active management is not restricted to parents. We have a great deal yet to learn about the criteria that lead children to decide what information they will transmit, which members of an older generation will be the recipients, and under what circumstances’ (pp. 63–64).

Goodnow (1996) suggested that agreement can be reached when each generation takes into account the view of the other. In her opinion this can require that ‘each generation monitors where the other stands (a cognitive process) and is interested in resolving differences or reducing any disharmony they may create (a motivational process)’. On the other hand, when either the child or the parent holds on to particular positions or regards them as non-negotiable, divergence will be the consequence. In addition, divergence may also occur when neither the child nor the parent is aware that a difference exists. It is apparent that the way Goodnow described the interactions addressed the double character of the representations mentioned above and the corresponding psychological cognitive and identity processes.

In the next part of this chapter we describe empirical research into the management of the transition between home and school in relation to mathematics. In what ways is children’s performance in the subject at school influenced by the negotiation of what Beach (1999) termed collateral transitions – the simultaneous participation in mathematics practices at home and at school (see chapter one). We will in particular try to understand the influence of a key social actor in this process – the parent.

3. THE RESEARCH CONTEXT AND METHODOLOGY

3.1. *Children in Multiethnic Schools*

Multiethnic primary schools in England seem to be an interesting situation in which to continue our investigations of home and school mathematics. Previous studies of ethnic minority students in this country have highlighted wide gaps between their lives at home and at school (McIntyre, Bhatti, & Fuller, 1997) and problems in the way they are assessed at school (Cline, 1998). Recent surveys also show substantial evidence of an interaction between ethnicity and achievement in mathematics (Gillborn & Gipps, 1996). Finally, patterns of ethnic group participation in the schools are more heterogeneous in this post-colonial situation than in the societies in which most of the research in this tradition has been conducted previously.

Multiethnic schools in this setting have some similar characteristics to the Brazilian schools in the original studies that generated the development of theory, ideas and new questions on relationships between home and school mathematics (Abreu, 1995a, 1995b and 1999). Some of them have on roll children from ethnic groups who, on average, underachieve at school. But it is likely that within any single year group there will be wide variation in performance among the children from the same ethnic group – including both high and low achievers. An important difference from earlier studies is that differences between home and school mathematics are likely to be linked to parents' experiences of a different culture and a different school system through going to school in their country of origin on another continent. In contrast, in the Brazilian study the focus was on parents' experiences with a distinctive non-school mathematics in the same area.

3.2. *The Children, the Schools and the Parents*

The data presented in this chapter were obtained in a study that consisted of a series of linked case studies. Twenty-four schoolchildren, their teachers and their parents participated in the study. The selection of the children took into account school performance in mathematics (high versus low achievement), ethnicity (White-British versus Pakistani-British²) and level of schooling (years 2, 4 and 6). Pupils are 6–7 years old in year 2, 8–9 years old in year 4, and 10–11 years old in year 6.

The children were selected from four schools serving two multiethnic areas of a small industrial town in the South of England. In each of the four schools ethnic

² All the children involved in the project were British. For the purpose of distinguishing between the two ethnic groups in the report we use 'White-British' for children whose parents were born in the United Kingdom, spoke English as their first language and came from the majority community and 'Pakistani-British' for the children whose parents came to this country from Pakistan and spoke Urdu as their first language.

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