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'Everyone is equal?': Investigating the views of minority ethnic students aged 11-14 towards science.

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Background

Statistics have shown that the number of students pursuing the study of science have fallen steadily over the last few decades, causing concern over the future supply of scientists as well as the proficiency of scientific knowledge in the wider population. Previous research have found students tend to have positive interest in science at the end of primary schooling (Murphy and Beggs, 2005; Silver and Rushton, 2008), but such enthusiasm appear to decline dramatically by age 14 (Lindahl, 2007; Osborne, 2008; Tai et al., 2006), suggesting the period Key Stage 3 (age 11-14) to be significant in moulding students' view towards science. As the dominant images of scientists, or science, are often seen as field for the 'white middle class male' (Burnell, 2009), this study is sociologically informed and focuses on the views of minority ethnic students (age 11-14) towards science, in particularly the issues of social class, gender and ethnicity. Thus, the paper will focus on how the factors of social class, gender and ethnicity shape the views of science amongst minority ethnic students, drawing on the perceptions of boys and girls towards science, how students from different socio-economic backgrounds approach science, and the role of ethnic (and cultural) background in shaping particular views, attitudes or aspirations towards education and science.

Research Questions

Two interrelated research questions inform this study:

1. What is the relationship between educational achievement and minority ethnic pupils' views of and aspirations in science?
2. How do inequalities of 'race'/ ethnicity, social class and gender shape minority ethnic pupils' views of and aspirations in science?

The conceptual works of Pierre Bourdieu (1986) are utilised, drawing on the notions of habitus and capitals to explore resources available to particular groups, and the ways in which the possession of capitals can privilege or handicap certain groups. In this study, students of Black Caribbean, Indian, Chinese, Pakistani and Bangladeshi ethnic origins are investigated, focusing on their views of and aspirations in science. Particular emphasis is placed on the role of the family, and how resources that may be specific to certain ethnic groups influence the ways in which students formulate their views of science.

Methods

This paper draws on qualitative data collected as part of a PhD study of minority ethnic groups and science aspirations. Data are collected between October 2009 and July 2010. In this study, 30 minority ethnic students are drawn from 4 schools within the London area, situated in 'suburban' and 'urban' localities. Students were individually interviewed for around 40 minutes on aspirations and views of science, probing into their expectations of the future as well as that of their parents. Furthermore, students were queried on the dominant images of science as a field for the 'white middle class male'. Focus group discussions were also conducted with the same pupils, where possible, from those of the same ethnic backgrounds, which lasted around 60 minutes. The role of the family (ethnic) culture is central to the discussion topics, as a communal understanding of parental and ethnic expectations are explored. Selected pupils from the individual interviews are also observed in science classroom lessons, to supplement the data garnered. Pupils were noted on the ways in which they

interact, communicate and participate in science lessons, such as with fellow peers and with the science teacher.

Frame

The findings reported in this paper are primarily drawn from qualitative interviews with minority ethnic students, enquiring their thoughts on science as a domain for the 'white middle class male', and as a potential field for future study. Data collected were analysed discursively (Bauman and Parker, 1993), with emerging themes constituting the preliminary findings

Research findings

Early indications from the data highlight a tension within the children's discourses between, on the one hand, the expression of idealistic, egalitarian values in relation to their perceptions of science ('everyone is equal', 'anyone can do science') and their awareness that a 'scientific identity' (and the embodied image of the scientist) continues to be popularly associated with white, (old) middle class males. The notion of capitals is also deployed to exercise the structural conditions within which young pupils' aspirations are formed and it is suggested that whilst Black Caribbean, Pakistani and Bangladeshi students appear to command 'high ambitions', these may not be underpinned by the cultural, social and economic resources required to realise them. It is suggested that this may explain the 'attitude-achievement paradox' as conceptualised by Mickelson (1990). In particular it is argued that a lack of awareness amongst minority ethnic young people about social inequalities may contribute to their continued underachievement and underrepresentation in the field of science.

This study complements a larger research project into science aspirations and the findings from this study is hoped to shed light into the insufficiencies of a 'one size fit all' approach towards rectifying the declining numbers of potential science students.