

# THE SUBTLE BUT PERVASIVE INFLUENCE OF CLASS IN LEARNING AT SCHOOL. THE CASE OF MATHEMATICS

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*Many studies show a child's academic success is a product of many factors, the majority of which are beyond the control and, sometimes, the knowledge of the classroom teacher. Through case studies of two children this study explores some of the factors which influence pupil success at school. We examine the direct and indirect influence on mathematics attainment of home and family background including the effects of the family socio-economic status and linguistic background.*

## CLASS AND (MATHEMATICS) EDUCATION

Current structural shifts in schools are “policies that do nothing to challenge deeper social and cultural inequalities” (Whitty, 1997, p. 58). In fact, the shift towards a ‘free market’ in education seems to have made little change at all to these inequalities. The education system continues to favour those whom it has always favoured - those of higher socio-economic status. For society more generally, as well as for many parents, the subject of mathematics is traditionally held as important - as a gatekeeper to successfully travelling through the educational system and as an inherent marker of intellect. Mathematics is a useful context in which to explore the inequality apparent in the education system as a whole because it performs a role of social segregation and it is this process we explore in this paper.

### **Social class, testing and ability grouping as social filters**

One particularly pertinent issue within mathematics education is that of the dominant practice of ability setting and this is a significant part of the structuring capability of school mathematics. However, much research has established a link between setting and under-achievement of lower socio-economic groups (William and Bartholomew, 2004). Grouping decisions are often made using results from some form of testing which itself is further problematic since it has been shown that different groups within society interpret test questions in different ways (Cooper, 2001).

### **Language and social class**

Understanding what is expected in school is a much larger issue than just understanding test questions - the problems of interpreting language within test questions is symptomatic of a difficulty with understanding the language used within the school mathematics. Zevenbergen argues

The rich language of middle-class parents prepares children for the language they will encounter in school mathematics. Conversely, working-class children encounter forms of language in the home environment different from that which they encounter in the school. (Zevenbergen, 2001, p. 43)

It is not simply what is being said, but the structure of how it is said that constitutes linguistic competence. Such competence is a form of capital that can be exchanged for success in the classroom. Middle-class children find the structure of classroom interactions familiar – they already have a large amount of linguistic capital from home.

## **THE CASE STUDIES: THE SCHOOL**

The two pupils, one girl and one boy, were selected as case studies to explore the issues outlined above in context. Both pupils attend a school located in an affluent suburb of a large city. The catchment of the school covers a large area including some of the affluent suburb (although most children in the immediate area are in the catchment of another highly popular secondary school), some nearby villages and an under-privileged inner-city borough. The school is moderately successful, and has particularly strong mathematics results. Mathematics is taught in ability groupings from the third week of year 7 – the first year of secondary schooling.

The students selected as case studies were Caitlin and Cory. Both pupils are on free school meals and live with their mothers. However, Cory is in the bottom set and Caitlin is in the top set. We examined the cultural capital they both received from their home environment and ask how they came to be at opposite ends of the school grouping system.

### **CASE STUDY 1: CAITLIN**

Caitlin was placed in the highest ability group in year 7. This already gives Caitlin an advantage through the ‘dividend’ of being in a top set. Caitlin came over as an articulate and confident girl with a high degree of mathematical skill and of general high intelligence. She is involved in many extra-curricular activities in school including performing in school productions. Caitlin is an only child who lives with her mother. She is clearly very close to her mother and spends time with her out of school doing a range of activities – ‘shopping, swimming and visiting different places’. She regularly visits her father. The most recent such visit consisted of going to ‘a small music festival’ and seeing all her ‘friends and family from dad’s side’. Caitlin’s mother has just completed a PhD.

Caitlin is successful in mathematical assessments. She is performing near the top of the highest ability grouping and seems very content there. She has an approach to lessons that will impress teachers and strategies that will ensure high exam results. It appears that success in mathematics is almost guaranteed; almost a forgone conclusion to the game she knows so well. She will probably continue in the top set, which means genuine access to the highest GCSE grades. She expressed an interest in pursuing mathematics to A Level, which should be a feasible option. Caitlin and her family discuss her future; her plan is to study Law at University. Whether this remains her plan is, of course, hard to predict but, what is certain is that she is on

course to academic success and should have a wide range of options available to her in the future.

## **CASE STUDY 2: CORY**

Cory was placed in the lowest ability grouping in year 8. Cory is a generally well-behaved boy who usually works hard and wants to do well. He is involved in extra-curricular sporting activities in school and has a talent for football. Cory's form tutor describes him as a pleasant member of the form who can be influenced by more disruptive pupils. Cory lives with his mother, his seventeen year-old brother and eight year-old sister. He sees his father regularly, the visits usually involving watching or playing football.

The lessons taught to the lowest ability group contained less complex language; questions are usually closed and easily understandable and explanations are accepted without pushing for greater clarity when there is a feeling of having seen evidence of understanding. Cory is not exposed to the richer language common in Caitlin's classroom. This means he does not develop his linguistic competence, which will continue to adversely affect his test results. It also affects his understanding of what it means to 'do mathematics'.

Cory's exam results indicate a slow progression. This means Cory has been placed in the lowest ability group and would probably remain there. This class is targeted for lower GCSE grades and, although the current changes to GCSE tiers means that, unlike his brother, a Grade C is in theory attainable, the likelihood is that he will not make the required progress. Cory's plans to go to college would therefore probably be the only path available to him to continue his education, since not achieving a grade C in mathematics would restrict his options.

## **DISCUSSION**

This examination of two pupils' differing learning trajectories in mathematics focuses on the influences of familial habitus and linguistic capital alongside the environment, namely the ability group, they are taught in. The ability grouping of both students in many ways determines their future attainment. Analysis suggests it is unlikely that either pupil will change ability group even at this early stage of their secondary education, as this grouping seems in many ways to be a product of much more than mathematical knowledge. In fact, it seems to be the grouping that has an affect on the type of mathematical knowledge attained.

Caitlin shares many similarities with her classmates. She lives in a similar area, she uses similar language and has similar values. Her mother may not currently possess a huge amount of economic capital but she and Caitlin's father have endowed their daughter with much social, cultural and linguistic capital. As she enters the educational field, she has distinct advantages; her capital earns her an enhanced reputation, a comfortable position in the highest ability set and high attainment.

Caitlin's progression through the schooling system has been thoroughly efficient. Her familial habitus is in close agreement with the school's and has required little adjustment. Linguistic structure at home and school share many commonalities. Attitudes towards education, largely derived from parental opinion and the experiences Caitlin has had, are compatible and help create a productive approach towards learning mathematics. School transfer posed no problems as Caitlin quickly established herself at secondary school. This agrees with Noyes' findings that 'the economically and culturally more well-endowed make the most of moving school' (Noyes, 2006, p. 43)

Cory's progression has not been so smooth and he has not achieved the same degree of academic success as Caitlin. There is no extreme friction between Cory and the school system, but they don't fit together as naturally as Caitlin and school seem to. As with Caitlin, Cory's attitude towards education echoes his mother's opinions and his impression of his father's disinterest. His view of education is narrower than Caitlin's; he sees the purpose of schooling as purely functional and looks at individual skills and knowledge as opposed to the value of an all-round education. Although schools often emphasise the functionality of what they teach, it is the case that they more fully embrace the middle-class notion of the importance of being well-educated.

On a more practical note, Cory's mother is less well-equipped than Caitlin's father to help with homework. In fact, the whole issue of homework in some ways discriminates against Cory. Whilst Caitlin receives additional knowledge and develops linguistic capital through completing homework with her father's input, Cory's mother struggles to help him. In one family it is an opportunity to share and develop the child's education, in the other it is more of a burden.

Caitlin has a significant amount of linguistic capital supplied from home. In addition, the classroom environment she learns in is rich in language. We see that Caitlin learns in an environment better equipped to facilitate learning, which from this perspective is the internalisation of social interactional processes, most commonly realised through language. Cory does not possess the linguistic capital that Caitlin does. This is a result both of social background and classroom environment, as Cory enters the school field with less linguistic capital and is placed in the lowest ability group. Then the school field, in particular, the classroom setting, which is advantageous for Caitlin, fails Cory. Cory's classmates, in all likelihood, possess similar linguistic competence and the teacher, in an attempt to 'pitch the work correctly', fails to enrich the language they are exposed to. This, in turn, has fostered a limited and unproductive view of mathematics which contrasts with the more constructive model Caitlin has constructed.

One important effect of the disparity in linguistic capital is performance in tests. Caitlin has developed a successful approach, she has the ability to independently decipher test questions and respond to them clearly. Cory, on the other hand, under-

achieves in a test situation as he fails to understand questions, applies an incorrect level of ‘appropriateness’ (Cooper, 2001) and is unable to structure coherent explanations. As a result, Cory was placed and remains in the lowest ability group.

Cory and Caitlin’s position within the mathematics setting system seems to have been determined by far more than ‘mathematical ability’. The differences originate in social status and familial habitus. A vicious circle has developed; working class students are disadvantaged as they enter the school field as they have a less compatible habitus, this manifests itself in underachievement in tests and in less impressive contributions in the classroom, which results in placement in lower ability sets. Here, they are surrounded by pupils with similar habitus and linguistic incompatibility with that used for school mathematics, which results in slower progression and continued underachievement in assessments, thus widening the gap between these students and the, largely middle-class, pupils in the higher sets.

Cory and Caitlin live just a few kilometres from each other in the same suburb in the same town, and they have much in common, yet they are worlds apart. The “comprehensive” school system brings them together and separates them further. Cory and Caitlin barely know each other, and at school would rarely come into contact. Although they are in two different school year groups (year 7 and 8) and are different gender, they also inhabit different social worlds. Outside of school, their paths do not cross, and in school this continues through both explicit and implicit structuring achieved by the system. What these detailed case studies of Caitlin and Cory suggests is that there is some substance to the joke about how to be more successful at school: If you want to be successful in school – change your parents.

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