

“I get the feeling that it is really unfair”: Educational triage in primary mathematics

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Reviews highlight the implications of ability-grouping in secondary mathematics, but knowledge of practices in primary mathematics is limited. My wider study (Marks 2012) suggests ability-grouping practices seen in secondary mathematics are mirrored in primary mathematics. One such practice is educational triage. This involves the direction of resources towards those most likely to benefit. This paper presents the outcomes and experiences of Year 6 (ages 10-11) pupils at ‘Avenue Primary’¹. It examines how educational triage is enacted and justified. Quantitative data highlights the academic outcomes of educational triage. Qualitative data illustrate the differential experiences of pupils.

Keywords: Educational triage, primary mathematics, setting

Introduction

The background literature on ability-grouping is vast with multiple reviews (e.g. Slavin 1990). Despite this, there are few clear answers. The secondary literature suggests there is no overall mean impact of ability-grouping on attainment. Gains for one group balance out losses for another. The literature on attitudinal impacts is complex with no clear association between set placement and attitudes.

Although there is a vast literature at the secondary level, research in primary mathematics is limited. Despite this, ability-grouping practices are increasing in primary schools. Surges in ability-grouping can be tracked to policy changes such as the inception of the National Curriculum and the National Numeracy Strategy (Hallam, Ireson, and Davies 2004). Ability-grouping has been encouraged by successive governments as a viable method for increasing attainment. The latest research suggests that the strongest form of ability-grouping – streaming – is rising in primary schools (Hallam 2011). This comes despite a lack of understanding of the consequences, explored here through educational triage.

Educational triage

Educational triage arises from Gillborn and Youdell’s (2000) study where they apply the medical model of triage to secondary mathematics. In a medical crisis, triage is used to assign limited resources for the greatest benefit. Casualties are grouped and treated accordingly. Generally three categories are applied: safe cases (those who will survive without intervention), cases suitable for treatment (requiring immediate treatment) and ‘hopeless cases’ (unlikely to survive even with treatment).

Gillborn and Youdell applied this triage process to the educational context, examining the systematic process of directing educational resources to some pupils whilst neglecting others. The focus of their study was on GCSE mathematics. They found that the pressures of accountability under the A-C economy resulted in practices being enacted to maximise the school’s scores in league tables, resulting in:

¹ All names in this paper are pseudonyms.

strategies [that] often focus on pupils seen as heading towards grade D passes, where an improvement of a single grade could potentially figure significantly in the school's final results. In effect, the schools seek to convert likely grade Ds into grade Cs. (Gillborn and Youdell 2000, 133)

Mapped onto the medical model, this resulted in students already performing at the A-C level being deemed 'safe' cases, those likely to obtain a grade D without further input deemed as cases suitable for treatment, and those unlikely to reach grade C deemed as 'hopeless cases'. Following triage, resources were targeted at groups to maximise outcomes, particularly for the current grade D students.

A similar process of educational triage has been documented in response to the Texas Reading Tests within US elementary education (Booher-Jennings 2005). Within the Texas Accountability System, students are required to pass a reading test to progress into Grade 4 (ages 9-10). Booher-Jennings' study suggests that an educational triage model is applied to these students. Students are categorised either as safe cases who will pass the test without input, cases requiring support who are currently achieving just below the required standard, and cases who would drain limited resources, including teacher-time, and still be unlikely to pass the gatekeeping test. These examples from the literature suggest two different contexts – secondary mathematics in the UK and elementary reading in the US – in which educational triage appears to be enacted. This paper extends understanding, adding an additional context – primary mathematics – to our knowledge.

Research design

The wider research this paper is a part of was a mixed methods multiple case study. The research involved 284 pupils and 13 teachers in Year 4 (ages 8-9) and Year 6 (ages 10-11, the final year of primary education) in two diverse primary schools.

Data subset

The data reported here come from the Year 6 sample in one school: Avenue Primary. Avenue was a three-form entry 3-11 primary school. The school was oversubscribed and academically high-performing, in a local authority with selective secondary education. Pupils were set into four mathematics sets from Year 2 (ages 6-7). All 88 pupils in Year 6 are included in this data subset and were involved in the quantitative research. Further, three focal pupils in Sets 1 and 4, and their teachers, were included in the qualitative aspects of the study. This data subset is outlined in table 1.

School	Year	Set	Research Methods	Total Pupils	Focal Pupils	Focal Teachers
Avenue Primary	6 (ages 10-11)	Set 1	Quant/Qual	31	Megan (HA), Natalie (MA), Olivia (LA)	Miss Gundry
		Set 2	Quant only	31		
		Set 3	Quant only	17		
		Set 4	Quant/Qual	9	Peter (HA), Rhiannon (MA), Samuel (LA)	Mr Leverton

Table 1: Data subset drawn on in study

Research methods

Attainment tests developed at King's College London (Brown et al. 2008) were conducted as pre- and post-tests with all 88 pupils in October 2007 and July 2008. These allowed the measurement, as maths ages, of average attainment gains made by

each set over the academic year. Attainment data were collated in SPSS and descriptive and inferential statistics applied. Over this same time period, 12 mathematics lessons involving Set 1 and Set 4 were formally observed alongside multiple informal observations of all sets. 12 individual and focal group interviews were conducted with the six focal pupils and two teachers. Qualitative data were collated in NVivo and analysed using constructivist grounded theory (Charmaz 2006).

Educational triage at Avenue Primary

Within the English education system, pupils are expected to achieve Level 4 in their SATs tests taken at the end of primary school. This is the critical level in terms of league tables and school accountability. Gillborn and Youdell’s model of educational triage describes well the established practices in place at Avenue, where pupils were split into four mathematics sets. Pupils in Sets 1 and 2 were already achieving at Levels 4-6 and as such were considered ‘safe’ by the school. Pupils in Set 3 were, at the beginning of Year 6, achieving at Level 3 but it was deemed that, with appropriate support, these pupils could be ‘uplevelled’ to Level 4. These pupils were considered to be the greatest risk to the school’s results and were referred to as the ‘Cusp Group’. Pupils in Set 4 were achieving at or below Level 3 and were deemed to be ‘hopeless cases’ who would not achieve a Level 4 even with additional input. This educational triage practice is superimposed on Gillborn and Youdell’s model in figure 1.

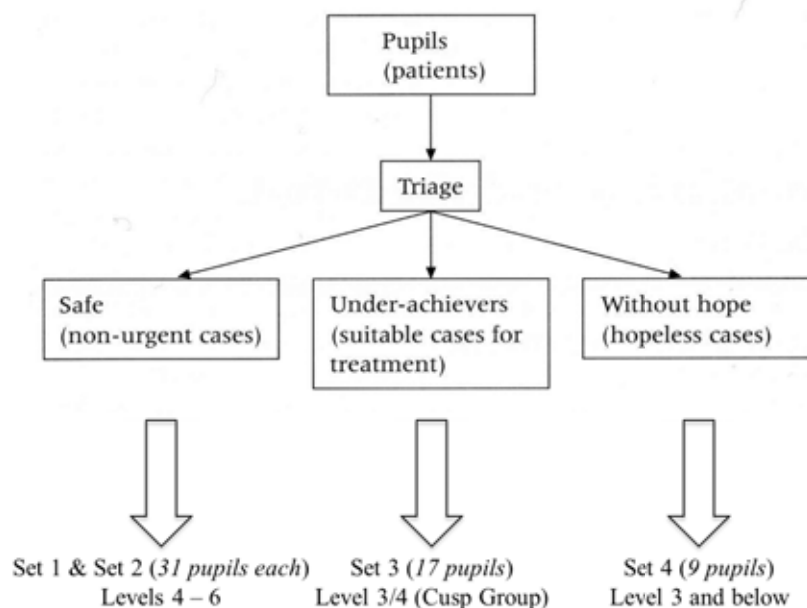


Figure 1: Educational triage at Avenue Primary in relation to Gillborn and Youdell’s (2000, 134) model

It is important to note that educational triage at Avenue was a conscious process with teachers aware of the differential treatments assigned to each set. Reflecting the anticipated outcomes for each set, triage was justified as an appropriate response to external accountability. Further, teachers drew heavily on discourses of ability and natural difference in the justification of differential treatment.

Academic outcomes as evidence of educational triage

The impact of educational triage at Avenue can be seen in the average mathematics attainment gains made by each set. These are illustrated in the boxplot in figure 2.

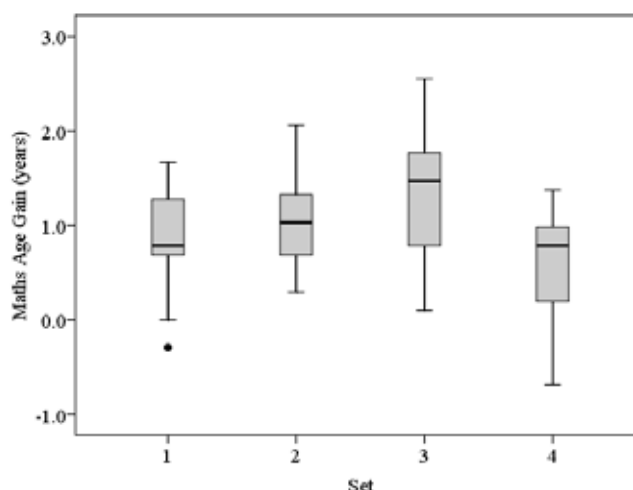


Figure 2: Attainment gains made by each set in Year 6 at Avenue Primary

It would be expected that pupils would make a gain of just under a year between the pre- and post-test. The quantitative data show that Sets 1 and 2 achieved at this level. Set 3, who were the focus of educational input, made an average gain of one year and six months, greater than the average gain made by Set 4.

Differential practices under educational triage

A number of differential practices appear to be implicated in the unequal attainment outcomes of each set. In this section I examine the qualitative data for evidence of these differences with respect to Sets 3 and 4, the major foci of triage practices.

Access to resources

A key difference between Set 3 and 4 was in the allocation of teachers. Avenue's established practice was to place the teacher considered strongest in Set 3, whilst Set 4's teaching was split between a cover teacher and a Higher Level Teaching Assistant (HLTA), a practice felt to be inequitable by some teachers:

The bottom set has an HLTA taking them which I think is atrocious, I mean, it's like if you've got dyslexia and you are given a teaching assistant to work with you but if you took it as a medical thing then you've got pneumonia and you're given a non-specialist nurse to look after you. If you've got something seriously wrong with you then you need a complete specialist to look after you. (Mr Leverton)

In terms of physical resources, Set 3 were taught in a Year 6 classroom with access to classroom and mathematical resources including an Interactive White Board. Set 4 did not have a stable classroom base. They were taught in a variety of rooms from special needs rooms to Portakabins and corridors. Consequently, Set 4 did not have consistent access to classroom resources and the time taken to respond to this took time away from learning. Pupils discussed this in their interviews:

They don't care about us being happy, they spend money in lower years, we don't have nothing, no resources in lessons, nothing. (Peter)

Pedagogic approaches

Classroom observations revealed differences in the teaching and learning approaches in Set 3 and 4. Set 3 followed a school policy and scheme of work, with the

mathematical content and teaching approach based on the Primary Framework. A range of approaches were used and pupils were, to an extent, encouraged to explore appropriate methods. In contrast, Set 4 predominantly completed worksheets, often aimed at Year 1 and 2 (ages 5-7) with limited consideration of progression. Whilst the pupils found low-level work humiliating, it is important to note that the teachers felt they were acting in the pupils' best interests, allowing them to experience success.

Alongside low-level work, Set 4 were constrained in the allowed approaches to mathematics. It was expected that they used cubes for all numerical work. This resulted in them being unable to move from the concrete to the abstract and restricted access to advanced mathematics with large number work being impractical. Again, the requirement to use cubes was enacted by teachers from a position of care where teachers talked about wanting to protect pupils from 'frightening mathematics'.

A further difference between Set 3 and 4 was in SATs preparation. In line with commonly reported practices in Year 6, lessons in Set 3 (and Sets 1 and 2) were dominated by SATs preparation with pupils working through practice papers and being taught techniques for different questions. In contrast, Set 4 received no preparation. Whilst the time taken away from mathematics for SATS preparation may not be viewed as positive, this resulted in Set 3 pupils knowing what to expect and may have resulted in increasing the attainment gap between Set 3 and 4.

Classroom discussion and collaborative working

Different classroom expectations between sets resulted in a restriction in Set 4 pupils' mathematical access. A behavioural focus was observed to dominate lessons and teachers talked about the need for strong teacher control. In lessons, the presumed need for teacher control resulted in pupils often working individually and not being allowed to engage in collaborative work or discussion:

Samuel and Saul are working (individually) on a worksheet on division by two (i.e. $16 \div 2$). They are using cubes to get the answers. Samuel puts his cubes into groups of two. He notices that Saul is putting his cubes into two groups. Samuel tells Saul he is doing it wrong, which leads to an animated conversation between the boys. This discussion is interrupted by the teacher who admonishes them for the noise they are making and tells them they must work individually.

The behavioural focus of the bottom-set may have led the teacher to immediately respond in behavioural terms. This limited the possibility for mathematical discussion and may have impacted on mathematical identities, engagement and attainment.

Discussion

This paper has shown how triage practices at Avenue increase the attainment gap between Set 3 and 4. The biggest surprise is perhaps not in the expected impact on the Cusp pupils but in the detrimental treatment of Set 4, particularly given the small size of this set (9 pupils) where it might be expected that more individualised attention would be supportive. Teachers' justification is complex. They discuss accountability, protection and natural difference yet simultaneously draw on a discourse of inequity. Pupils demonstrate an awareness of differential treatment and the relation to levels:

Peter: The bottom ones are 3s, the next ones are 4s then 5s and 6. Miss Gundry's are 6, then Mr Fuller's are 5.

Samuel: I get the feeling that it is really unfair.

Peter: Mr Quinton's set are 4 and Mr Leverton's are 3 ... Well it's not fair.
In Mr Quinton's group you get treated differently.

The increased attainment gap and differential treatment result in restricting set movement. This adds to the literature on the constraining practices emanating from setting in secondary mathematics (Bartholomew 1999). Further, the attitudes pupils develop in relation to their set experiences may have substantial longevity, impacting on future participation and adult attitudes towards mathematics (Boaler 2005).

This research extends the evidence we have of educational triage occurring as well as exploring how it has the impacts it does. However, it must be noted that educational triage is just one practice related to setting in primary mathematics. We need to be looking further at the impact of an ideology of ability at the primary level in order to extend our understanding of engagement in mathematics.

Acknowledgement

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