

IMAGES OF SETTING IN THE PRIMARY CLASSROOM

JULIA DAVIDSON

SYNOPSIS

Setting in Scottish primary schools is a relatively recent phenomenon and should be regarded as experimental rather than as an established alternative model of organising groups of pupils. Setting is defined here as arranging students for a given curriculum area in separate classes with different teachers, based on students' attainment levels in that particular area. Setting has been advocated in Scottish secondary schools and also, in some contexts, in primary schools (SOEID, 1996): it is attractive to some Education Authorities and Headteachers; although others are more cautious or even sceptical about the efficacy of the method. The research reported here was part of a larger two and a half year study of 16 primary schools which was completed in 1999. In the four case-study schools which this paper highlights, setting was operating for Mathematics. This paper outlines the various research methods used and illustrates some of the topical issues (both positive and negative) for students and their teachers associated with setting in the context of these four primary schools. A question is posed about whether the differentiation disaffection of many students found in previous studies of setting in schools in England is exactly replicated in these four Scottish schools.

INTRODUCTION

What is "setting"?

The research associated with grouping students by ability is fraught with complexity and misunderstandings about terminology. A lot of the research on setting has been conducted in the United States of America (Slavin, 1990) and many of the terms associated with student grouping strategies have slightly different meanings: some related terms which are in common usage include regrouping, tracking, mixed-ability teaching, broad-banding, streaming and differentiation. Also, the commonly-used descriptors which relate to the ability range of a class, heterogeneous and homogeneous, are not usually adequately defined in the research context (see for example, Lowenstein, 1989).

The term setting is used in this paper to mean, arranging students based on levels of *performance in the associated curriculum area, in separate classrooms with different teachers* (McPake, Harlen, Powney, and Davidson, 1999a). Primary school students in Britain mostly remain in the same classroom with the same teacher throughout the school year: however grouping students *within* classes is widespread. For the sake of clarity in this article, differentiation of students by ability *within the same room*, is not included in the current definition of setting.

Why research setting?

Reviewing research on the effects of grouping students by ability could easily generate cynicism about educational research. There is something to please everyone - some studies lend support to grouping by ability, some point in the opposite direction and many show that there is little difference that can be ascribed to the type of grouping. The reason for so much ambiguity is that this is a very difficult area for research ...

This is the conclusion of the authors of a research review of setting written primarily for practitioners (Harlen and Malcolm, 1999). So given the difficulties with interpreting

research in this area, why should we try to evaluate setting? A major reason is that setting has been suggested as a way forward in both primary and secondary schools by various government reports (e.g. OfSTED, 1998); and the majority of primary schools surveyed in a study in England (60% of 765 schools) have recently changed their system of grouping students (Hallam and Toutounji, 2001).

However, the overall picture from research in Britain and internationally does not show a direct connection between setting and student performance. Setting may be less relevant in other European countries outside Britain because students tend to be kept back a school year if they do not reach the appropriate educational standards and so the range of abilities within a class may in practice be generally less than in Britain (e.g. see Prais, 1997). However, French students do progress automatically through primary (elementary) school and ability grouping has received some attention in the literature (eg Mingat and Duru-Bellat, 1998).

In England, Hallam, Pollard and West (2001), in a recent large-scale quantitative study, represent the range of grouping practices found in secondary schools in three broad categories: mixed ability, partially set and set. Their sample involves 6000 students at Key Stage 3 (age 14) and includes baseline data from Key Stage 2 (age 11) as a control against which attainment gains can be measured. Unfortunately their cohort of what they term “*mixed ability schools*” includes some schools with setting in two subjects at year 9 which may somewhat limit the generality of their conclusions. The researchers found that many factors, such as school ethos, student background and gender, interact with setting to impact on the learning experience of students.

Notwithstanding the above research findings, the wide range of abilities which is usually apparent in the upper end of the primary school is oft-cited as the prime reason for setting in Mathematics in Britain (see the Committee of Enquiry into the teaching of Mathematics in Schools, 1982).

So what does the British research say about setting practices inside schools? Evidence comes from studies utilising various research methods both qualitative and quantitative. The main issues, which are discussed in more detail below (see Boaler, William and Brown, 2000; Lee and Sukhmandan, 1998; and Hallam and Toutounji, 1997), include:

- gender-specific anxieties
- teacher demoralisation
- student alienation for socio-economically disadvantaged children
- adverse effects related to age of children (in terms of their season of birth)
- curriculum differentiation polarisation.

The classic evidence for gender-specific anxieties comes from case studies in English secondary schools (Boaler, 1997) which reveal that the pace of the work in the highest performing Mathematics classes is often too stressful for girls and that the lowest sets find that their work does not stretch them enough. The observed phenomenon involves not only differentiation polarisation of the curriculum but also of the students: that is, generally speaking, in each of the set classes the curriculum is different and the majority of students feel constricted by their allocated set. Also, teachers report feeling demoralised by teaching low-ability sets, according to Hallam *et al* (2001).

Much of the above-mentioned research is based in the context of the secondary school. Comparisons between reactions of students and teachers in secondary and primary schools situations need to be treated with caution. The seminal research reviews about ability grouping across classes treated the primary and secondary levels

separately (Slavin, 1987 and 1990 respectively). Also, previous research in England draws conclusions about the overall British picture. There are many reasons why this picture may not be universal, particularly in Scotland where the education system is different and over one third of schools are small, with less than 120 students (Wilson and McPake, 1997). This article will focus on the Scottish primary school.

Setting in the Scottish primary school context

In the Scottish primary school, as opposed to the secondary school, setting is regarded as experimental rather than established practice: it was recommended by Her Majesty's Inspectors for consideration at the upper end of primary school in some contexts in large schools with multiple classes at P6 and P7; by contrast, secondary schools were advised to move to "broad band" setting in S1 as soon as feasible (SOEID 1997). Setting in primary schools is attractive to some Education Authorities and many Headteachers, although others are more cautious or even sceptical (McPake, Harlen, Powney and Davidson, 1999b). The focus here is on the view from *inside* the Scottish primary school, and highlights the views of students and their teachers.

The large-scale observational research study, of which the research reported here forms only a small part, can be argued to be open-ended and ethnographic in approach. The broad aim of the study was to look at what was happening and produce verbal pictures or 'snapshots' taken from inside Scottish primary classrooms in 16 schools, including eight classes in the last year of primary school, P7. Four schools were chosen because setting was known to be in operation within each. The findings have been presented in more detail elsewhere (McPake *et al.*, 1999a,b). However, it is notable that the resulting overall estimates of students' time on task, a proxy measure for student learning, are broadly comparable to those found in English classrooms (eg Pollard, A., Boradfoot, Croll, Osborn, and Abott, 1994).

The curricular foci associated with setting in the four case study schools were English Language (in three schools) and Mathematics in *all* of the schools. The principal purpose here is not only to highlight the research methods but also to illustrate topical issues about the teaching of Mathematics and setting in these four schools. The pictures presented were developed mainly through observation in the classroom and interviews with students and their teachers to explore perspectives in each of the four case-study setting schools.

RESEARCH DESIGN

As already mentioned, the research outlined here is part of a wider study of teachers' and students' experiences in 16 primary classrooms. It involved classes at three levels in the primary school: four in the early years at P1, four in the middle stages at P4 and eight at the upper end in P7. Four P7 classes, were chosen because setting was in operation. The project was funded by the Scottish Office Education and Industry Department (SOEID) for two and a half years and was completed in March 1999 (McPake *et al.* 1999a, b). The concern here is on data from the four P7 classes where setting was in operation.

The four setting schools

The case study schools were selected for participation on the basis of geographical location, size and social background. School A had a very broad range of social backgrounds within its catchment area. All schools in the sample had some socio-economically disadvantaged students as indicated by the percentage of Free School Meals Entitlements (see Table 1). However, School B had a very much higher proportion (64%) than the other schools (16%, 19% and 21%). The size of the

schools, based on the school roll, varied substantially: the schools' overall size ranged from 136 to 586 students (see Table 1). School B was small and had less than 200 students (136 students), Schools C and D were medium-sized with between 200–600 students (324 and 391 students respectively) and School A was large with nearly 600 students (586 students).

Logistics of the setting school visits

Two researchers observed the classroom activities of the selected P7 classes for a whole school week: one focused on the activities of six 'target students' and the other observed the class teacher. These target students were selected in advance, in collaboration with the class teacher who identified a boy and a girl from each of a high, average and low ability set. The observers followed a rotating sequence during setting to ensure that all target students (and teachers) were observed on a regular basis. A brief summary of the research methods is given below (for further details, see McPake *et al.* 1999a,b):

- Observations based on time sampling using structured schedules
- Open-ended observations based on field notes
- Video recording of a whole day in the classroom
- An extended interview with the teacher about their personal philosophy of teaching
- Brief interviews with students and class teachers, based around digital images of typical student activities. These interviews, which took place most days when teachers' time permitted, totalled thirty-four.

The key purpose of using photographs in the brief interviews was to create a situation in which talk may be less inhibited and more spontaneous (Schratz and Walker, 1995). The photos were useful in the following ways:

- as a "can-opener" to help start off (Collier, 1967)
- as a reminder to the researcher to focus on the specific details of the student activities
- to allow a comparison of the perspectives of the students and their teachers.

The above data sources were triangulated and interrogated using grounded theory methods to look for themes (Glaser and Straus, 1967; Straus and Carbon, 1998).

FINDINGS

Characteristics of setting in the four schools

Each of the four schools used a very different model of setting which may well lead to different outcomes for students. Their arrangements for setting varied and were far from straightforward. Some of the key characteristics of their arrangements are summarised below in Table 1 (for further details see McPake *et al.*, 1999a). Setting for Mathematics ranged from two to five hours a week. Class size varied between sets in two of the schools and ranged from 10 to 33 students. Schools A, B and D also had setting for aspects of English Language, such as spelling and dictation. Setting in Schools B and C included students from more than one school year level. In Schools A and B setting started in the early years in P3.

Table 1: Characteristics of the Four Case Study Schools and arrangements for setting

School Roll	Free School Meal Entitlement	Class sizes	Year levels	Curriculum area: Weekly hours
A: Large 586 pupils	16%	Lowest ability set smaller	Within P7	Maths: 4 English Language: 4
B: Small 136 pupils	64%	All sets similar	Across P2–P7	Maths: 5 English Language: 1
C: Medium 324 pupils	19%	All sets similar	Across P5–P7	Maths: 4
D: Medium 391 pupils	21%	Lowest ability set smaller	Within P7	Maths: 2 English Language: 2

Broadly speaking, the introductory definition of setting did provide a necessary but not a sufficient description in each of the four schools: students were arranged for mathematics according to their *assessed performance* in *different classrooms* with *different teachers*. However, it was not necessarily the case that *every* student in every school was observed to be grouped solely on the basis of their assessed performance: social factors and class size considerations were sometimes observed to be important determinants of a student's allocated set. For instance, in the small school B the highest attaining Maths set included, apparently for social reasons, two very conscientious girls still grappling with learning their *three* times table.

Students' and their teachers' attitudes to the setting arrangements

It has to be borne in mind that the interviewing of students and teachers was facilitated by photographs, although it was apparent that discussions were somewhat limited by students' familiarity and language in talking about learning. However, some of the issues which were raised are highlighted below. One of the questions the target students were asked was whether or not they preferred working in their set class or their ordinary (mixed-ability) class and their responses varied: a slight majority (9 out of 17) of the students preferred sets. Teachers' views on what students preferred also varied: slightly fewer teachers (8 out of 17) thought that this would be their student's preference.

Students were also asked about which grouping arrangement they felt was better for their learning and again their attitudes varied: a two-thirds majority (10 out of 17) said that they learnt more in sets. One boy believed that the class grouping made no difference to his learning. Slightly fewer teachers (8 out of 17) thought that learning was better facilitated in sets. Three teachers commented that setting did not make any difference. Hence, although not with everybody, sets were popular with a majority of both students and teachers who expressed a preference favouring setting.

Other issues about setting for students and teachers

The issues mentioned by students and their teachers varied and may be related to the specific characteristics of setting in the four schools (see Table 1). Some of the positive and negative issues which will subsequently be illustrated relate to:

- Curriculum integration
- Class size
- Self-directed student learning
- Class atmosphere.

There were instances where the views of the teachers were quite different from those of the students. For example, in the small school (School B), according to the teacher of the low-ability set, Maths sets were beneficial for Jack because he had poor English Language skills. She explains:

He has more success in here 'cause there's not so much written work. He's not confident in his writing... (School B teacher)

However Jack comments that he:

...prefers the ordinary class... it is not just Maths but writing is taught too (School B, student)

In fact, Jack did experience some Mathematics outside his set class.

Curriculum integration: Mathematics occurring rarely outside the set classes

Mathematics was observed outside the set classes in two of the setting schools, B and C. Topics that were observed included: Area of two dimensional shapes; and Tangrams puzzles (eg Millington, 1986).

Class size: Smaller classes for the lowest ability sets

When smaller classes than the ordinary (mixed ability) class were arranged especially for setting (as in Schools A and D), they were popular with both students and teachers. Classes larger than the ordinary class were not so popular with teachers. The teacher of a "top" set (with 33 students) complained that she had to move in extra chairs during Maths and thought that:

...some [students] are not keeping up with the pace and I hope to drop them to a lower group. (School D teacher)

Students in the lower ability set said that it was easier in the small class for the teacher to give explanations to the whole class and that this was their preferred learning arrangement. Louise from the lowest attaining Mathematics class explained:

I learn more being in this class. It's a small class and this means the teacher doesn't have to explain things over and over... (School A student)

This comment highlights the complex inter-relationship between the success of whole class teaching and class size. Louise's teacher felt that she was able to be more focused in her teaching because the set class consisted of one broad attainment band.

Self-directed student learning: Independent learning in a lowest ability set

In School D a teacher and a student agreed that having the students in a different classroom, away from their usual social group created an atmosphere conducive to

independent learning in the lowest attaining Maths set. Barbara felt that:

...in this class we have to try to do it for ourselves ... to push ourselves up...
(School D student)

Barbara's teachers explained:

It is a novelty in sets. Not as many distractions. Mixes them up socially.
Students try harder... (School D teacher)

Class atmosphere: Set classes may have a positive atmosphere

In School C, teachers mention that students seem happier working with other students of a similar level of knowledge and understanding. The teacher, Mrs O'K of the lower ability set says about Roy:

...He enjoys being in this class because he can pretend to be at the top.
...Orally he's quite good... (School C teacher)

Roy did say that he preferred his set class with Mrs O'K. As he put it:

I prefer my set class because I don't get a lot of Maths except with Mrs O'K...
I like this class, being on my own I get peace... I try to move up but sometimes
I get low scores... They've got high groups and low groups... some people
are good at Maths and some aren't and I'm right in the middle...

Students in this school commented positively on the atmosphere in their set classes: they said it was calmer and quieter and the behaviour of other students was better in sets. In this school, a novel form of student assessment was observed in the top set class. Students took turns in volunteering to design a short test based around mental Mathematics (and preparing their own solutions at home) and then administering the tests orally to the whole class. Danielle in the top set concludes:

I prefer the type of whole class work you get in set Maths. There is a calm atmosphere... (School C student)

DISCUSSION

Defining setting practices in the Scottish primary school context was not straightforward and practice varied considerably across the four schools: the diverse elaborations may warrant further validation with teachers, students, parents and the wider community. Typologies of schools and their communities could be further developed than is possible from the data collected in the current research. There is a paucity of research about Scottish parents' attitudes to differentiation. However, in England research suggests that middle class parents prefer setting (Ball, Bowe and Gewirtz, 1994). Evidence from Germany suggests that parental networks shape school outcomes for ethnic minority students (Werum, 2000).

Scottish classrooms are now changing due to a raft of government initiatives which have so far mainly focused in the early years of the primary school: these include the Early Intervention Programme, Reducing Class Size and the introduction of Classroom Assistants (e.g. SOEID, 1998a, b; Fraser and Pirrie, 2001); and there are some whole school programmes coming on stream, including the New Community schools and Glasgow's Learning Communities. The numeracy strand of the Early Intervention Programme is reported to be showing positive benefits for some high achievers and socio-economically disadvantaged groups in the early years. How far are children in the upper years of the primary school being further supported is a pressing question which remains to be addressed (Fraser and Pirrie, 2001). Whether setting does raise attainment is a topical issue in some Scottish upper

primary classrooms. Hence, teachers need formative research and evaluation to help them to develop innovative differentiated teaching and reinforcement strategies and materials, with relevant curriculum breadth and depth in Mathematics for various task designs, social backgrounds, gender and collaborative interactions tailored to their classes, whether they be in sets or mixed ability classes (see for examples: Howe, 1997; Simpson, 1997; and Simpson and Ure, 1994).

CONCLUSIONS

In the present case study schools, although there were some negative aspects of setting, positive issues were also raised by students and their teachers. A majority preferred setting and believed that learning is better facilitated in sets. The observed movement of students between sets was limited, and confirms findings of differentiation polarisation of students elsewhere in Britain. However, the current research does provide some evidence that disaffection of the majority of students reported in many English studies (see Boaler *et al.*, 2000) is not exactly replicated in these Scottish primary schools.

Finally, there is a worthwhile methodological point arising in this study: interviewing students and their teachers can be facilitated by photographs but may be limited by students' familiarity and lack of language in which to talk about learning. Hence, it is important to use a combination of methods, which have consistent or similar epistemologies to broaden the researcher's understanding of classroom activities and interactions. Future research could involve collaborations between researchers, practitioners and their school community using a combination of observation methods in a more formative way to evaluate students engaging in novel programmes of mathematical activities.

ACKNOWLEDGEMENTS

A version of this paper was first reported at the European Educational Research Association's Annual Conference in Lille, France in 2001. The author would like to thank the audience for their constructive feedback, especially Dennis Beach. Any mistakes are of course the author's sole responsibility.

REFERENCES

- Ball, S. J., Bowe, R. and Gewirtz, S. (1994) Competitive schooling: values, ethics and cultural engineering. *Journal of Curriculum and Supervision*, 9, 350–367.
- Boaler, J. (1997) Setting, social class and survival of the quickest. *British Journal of Educational Research*, 23 (5), 575–595.
- Boaler, J., Wiliam, D. and Brown, M. (2000) Students' experiences of ability grouping - disaffection, polarisation and the construction of failure. *British Educational Research Journal*, 26 (5) 631–648.
- Committee of Inquiry into the Teaching of Mathematics in Schools (1982) *Report: Mathematics counts*. HMSO. London.
- Collier, J (1967) *Visual Anthropology: Photography as a research method*. Holt, Rinehart & Winston. New York.
- Fraser, H. and Pirrie, A., McDougall, A. and Croxford, L. (2001 in preparation) *National Evaluation of the Early Intervention Programme*. Final Report.
- Glaser, B. and Straus, A (1967) *The Discovery of Grounded Theory*. Weidenfeld and Nicolson.
- Hallam, S, Pollard, A and West, A (2001 in preparation) Possible consequences of structured ability groups in schools. In book: *Fuzzy Predictions*.
- Hallam, S. and Toutounji, I. (1996) *What do we know about the grouping of students by ability? A research review*. London: Institute of Education, University of London.
- Harlen, W. and Malcolm H. (1999) *Setting and streaming*. Edinburgh: SCRE.
- Howe, C. (1997) *Gender and Classroom Interaction*. Edinburgh: SCRE..
- Lee, B. and Sukhmandan, L. (1998) *Streaming, setting and grouping by ability: a review of the literature*. Slough: NFER.

- Lowenstein, L. (1989) Homogeneity and Heterogeneity in Classroom teaching. Is the case irrelevant. *Education Today*, 42(2), 24–30
- McPake, J., Harlen, W., Powney, J. and Davidson, J. (1999a) *Case Studies of Setting in Primary School Classrooms*. Edinburgh: SCRE.
- McPake, J., Harlen, W., Powney, J. and Davidson, J. (1999b) *Teachers' and Students' Days in the Primary Classroom*. Edinburgh: SCRE.
- Mingat, Alain and Duru-Bellat, Marie (1998) Importance of ability grouping in French “colleges” and its impact upon students’ academic achievement. *Educational Research and Evaluation*, 4, 348-368.
- Office for Standards in Education, OfSTED (1998): *Setting in Primary Schools*. London: OfSTED.
- Millington, J. (1986) *Tangrams - Puzzles pictures to make you think*. Norfolk: Tarquin.
- Pollard, A., Broadfoot, P., Croll, P., Osborn, M. and Abott, D. (1994) *Changing English primary Schools: The Impact of the Education Reform Act as Key Stage One*. London: Cassell.
- Prais, S. J. (1997) Whole-class Teaching, School-readiness and Students’ mathematical Attainments. *Oxford Review of Education*. 23 (3), 275–290.
- Schratz, M. and Walker, R. (1995) *Research as Social Change: New Opportunities for Qualitative Research*. London: Routledge.
- Scottish Office Education and Industry Department (1996) *Achievement for All. A Report by HM Inspectors of Schools*. Edinburgh: SOEID.
- Scottish Office Education and Industry Department (1997) *Improving Mathematics Education. HM Inspectors of Schools*. Edinburgh: SOEID.
- Scottish Office Education and Industry Department (1998a) *The Early Intervention Programme. Raising Standards in Literacy and Numeracy*. Edinburgh: SOEID.
- Scottish Office Education and Industry Department (1998b) *Setting Targets: Raising Standards in Schools*. Edinburgh: SOEID.
- Simpson, M. and Ure, J. (1994) *Interchange, 30: Studies of Differentiation Practices in Primary and Secondary Schools*. Edinburgh: SOED,
- Simpson, M. (1997) Developing differentiation Practices: meeting the needs of pupils and teachers. *The Curriculum Journal*, 8 (1), 85–104.
- Slavin, R.E. (1987) Ability grouping and student achievement in elementary schools: a best-evidence synthesis. *Review of Educational Research*, 57(3), 293-336.
- Slavin, R.E. (1990) Student achievement effects of ability grouping in secondary schools: a best-evidence synthesis. *Review of Educational Research*, 60(3), 471-499.
- Strauss, A. and Carbon, J. (1998) *Basics of Qualitative Research*. London: Sage.
- Werum, R. (2000) *The Ethnic dimensions of social capital: How parental networks shape Track placement in Germany*. ACER conference. Chicago.
- Wilson, V. and McPake, J. (1997) *Managing change: lessons from Scottish small schools*. Edinburgh: SCRE.