

Class size, grouping practices and classroom management

Peter Blatchford (a) and Anthony Russell (b)

(a) Dept of Psychology and Human Development

UCL Institute of Education, University College London, 25 Woburn Square, London, WC1H 0AA

Tel: (0)20 -7612-6268

email: P.Blatchford@ucl.ac.uk

(b) Dept of Psychology and Human Development

UCL Institute of Education, University College London, 25 Woburn Square, London, WC1H 0AA

Tel: (0)20-7612-6268

tony_tajik@hotmail.com

Corresponding author Peter Blatchford

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Abstract

The intense argument over class size has been about associations with pupil academic outcomes. Often overlooked is the way class size affects teachers' classroom management of learning in groups. As part of a large scale multi-method project that tracked pupils' educational progress from 5 to 11 years, data were collected on teachers' experiences through annually administered questionnaires at Y4,5 and 6 (n=486) and interviews with teachers as part of detailed case studies (n=10 schools). Results show that class size does not directly impact on attainment, but works through the many ongoing difficult decisions teachers have to make about how best to manage and teach pupils in groups. A strategic approach is needed to teaching groups and collaborative learning in groups.

Keywords

Class size, classroom management, groups, group work, social pedagogy

1. Introduction

For many years class sizes in schools have been the subject of intense debate and scrutiny. Much of the debate about class size has been about whether reducing the number of pupils in a class has a beneficial effect on pupil school attainments. An interesting feature in the debate over class size is the entrenched gap between the view of most teachers, practitioners, teacher unions, parents and some researchers, who feel that small classes are beneficial for teaching and learning, and an alternative view, often favoured by economists, policy makers and think tanks, but also some academics, that class size is not important.

1.1 Class size and classroom processes

Almost all the research and commentary on class size has been about associations with pupil academic outcomes and in our view much of this has become formulaic and unhelpful. It seems clear from our work to date that class size effects do not work directly in relation to pupil outcomes but are mediated through a number of interconnected classroom processes. Despite a few reviews of the literature on classroom processes affected by class size (Biddle and Berliner, 2002; Blatchford 2012; Blatchford, 2016; Ehrenberg et al, 2001; Hattie, 2005; Finn et al, 2003), dedicated research on mediating classroom processes is still relatively limited. This information is important because without it there are difficulties in explaining effects on pupils' academic performance, and it is also difficult to offer practical guidance on how to maximise the opportunities provided by classes of different sizes, or how to make the most of large classes.

Over the years, the team at UCL Institute of Education have worked on a programme of research (The Class Size and Pupil Adult Ratio – CSPAR - project) which has used mixed methods to better understand classroom processes related to class size. These have included class size and teacher pupil interactions and pupil behaviour (e.g., Blatchford, 2003a; Blatchford, Bassett & Brown, 2005, Blatchford, Bassett & Brown, 2011, Blatchford, Moriarty, Edmonds & Martin, 2002, Blatchford, Russell, Bassett, Brown & Martin, 2007) , and class size and within class groups (e.g., Blatchford, Baines, Kutnick, & Martin, 2001). In this paper we extend our previous research by examining the connections between class size, within class groupings and classroom management.

1.2 Within class groups

One important feature of classrooms that often gets overlooked, and this applies as well to debate over class size effects, is the way that pupils in classrooms are often grouped in some form or another. In many Western countries classes are organized into separate groups of children, and these groupings are a main context, within classrooms, for teaching and learning. In British primary schools, pupils are usually taught by one teacher for most subjects, and in recent years there has been a huge growth in the use of paraprofessionals, usually called 'Teaching Assistants' (TAs), who often support pupils with special educational needs. Even when taught as a whole class, pupils typically remain in their groups.

Research on effective teaching has tended to assume an underlying direct model, in the sense that the focus has been on the effect of teachers on pupils' attainments (see Creemers, 1994, Kyriakou, 2009, Muijs and Reynolds, 2011). But teachers in classrooms do not meet pupils individually, out of context, but they (and for that matter pupils) will necessarily need to adapt to the classroom context, which will include features such as the number of children in the class and groupings within the class. In line with Bronfenbrenner's model (1979), this paper is informed by a conceptualisation of educational processes taking place in hierarchically organised contexts. But Bronfenbrenner's model needs to be developed because within the 'microsystem' of the school, there will be smaller contexts, especially the classroom, which has distinct sets of relationships, rules and dynamics. In addition, and of particular relevance to this paper, contexts are nested *within* classrooms. An early conception of the immediate environment as a factor in everyday behaviour was the ecological psychology of Barker and colleagues (Barker and Gump, 1964, Kounin and Gump, 1974). When applied to classrooms, the basic idea is that different within classroom contexts (called 'behaviour settings') have forces or 'signals' different to other contexts, which pull events and participants along with them (Kounin and Gump, 1974).

The benefits or disadvantages of different within class grouping practices has aroused a good deal of comment and research in Britain and elsewhere. 'Progressive' primary education practices, including small group work, championed by the Plowden Report (CACE, 1967), were long ago criticised as being ineffective (Alexander, Rose & Woodhead, 1992), and there have been strong Government backed recommendations (e.g., Muijs and Reynolds, 2009) that teachers adopt interactive and knowledge based whole class teaching methods.

Despite these pressures, surveys by Galton, Hargreaves, Comber, Wall & Pell (1999) and Pollard, Broadfoot, Croll, Osborn & Abbott (1994) have shown the popularity, going back many years, of organising groups on the basis of similar attainment or 'ability' levels. A detailed analysis using a 'classroom mapping' technique for describing grouping practices at representative moments in time in primary and secondary schools (Baines, Blatchford and Kutnick, 2003), showed that pupils of all ages, even Reception (4-5 years), were most likely to be in similar ability groupings. Lou, Abrami, Spence, Poulsen, Chambers, & D'Apollonia, (1996), in a meta-analysis, showed the pedagogical advantages of small group instruction in terms of peer learning, flexibility over learning objectives and meeting individual needs, and encouragement of higher-order learning skills.

In Britain there is something of a paradox in that although organising classes into groups is common in schools, this has not been supported by a well developed pedagogy regarding the teaching of such groups (Alexander, 1992). At the same time, while studies have shown that collaborative group work is not common in schools (Galton et al, 1999, Kutnick and Blatchford, 2014, Pollard et al, 1994), the literature on co-operative and collaborative group work paints a positive picture in terms of pupil

attainment and levels of classroom engagement (Hattie, 2009, Kutnick and Blatchford, 2014, Johnson and Johnson, 2003, Slavin, 1990).

Logically the two levels, that is class size and within class groups, *have* to be connected, that is, as class size increases groups must either become bigger or more numerous. Bourke (1986) found that teachers in larger classes in Australia tended to form more groups during mathematics lessons and that this led to fragmentation of the lesson and inefficient use of the teacher's time. Lou, Abrami, Spence, Poulsen, Chambers & D'Apollonia (1996) found, on the basis of their meta-analysis of within-class grouping studies, that smaller group sizes were optimal for pupils' learning; larger groups of 6 to 10 members were less effective. The connection between class size and within class groupings was examined in an earlier paper using CSPAR KS1 (5-7 years) data (Blatchford et al, 2001). It was found that the number of groups in a class increased with the size of the class. Small classes had on average just over 3 groups, while large classes approached 6 groups.

1.3 Classroom management

But even if one can demonstrate a relationship between class size and the size and number of within class groupings, the important issue to be explored, in relation to class size effects, is what this means for teachers' classroom management and decisions about learning. The educationally important question, in other words, concerns *how* in practice teachers manage the class groupings, and whether this is affected by the overall size of the class. There are separate literatures on classroom management (e.g., Evertson and Weinstein, 2010) and class size effects (see above), but as far as we know the connection between size of class, within class grouping, and classroom management has not been looked at systematically before.

A previous paper on class size (Blatchford, Russell, Bassett, Brown & Martin, 2007) showed that in response to a general questioning on teaching practices, teachers in KS2 (7-11 years) were much occupied by the connection between teaching and groupings in the classroom. In this paper, the focus is more directly on the relationship between class size, within class groupings and classroom management. It seems likely that the size of the class will have implications for the decisions that teachers make about how to manage groups for learning, e.g., how attention is distributed between pupils, how the teacher handles teaching and group allocation when there are sometimes wide differences in attainment and behaviour of pupils in the class, and how groups are composed. It seems likely that a small class size of, say, 15 will result in different decisions about teaching and classroom management in comparison to a larger class size of, say, 35 pupils.

1.4 Research Questions

The first research question asks exactly how teachers organised children into groups (e.g., in relation to ability, age, friendships, compatibility between children).

The second research question asks how grouping practices have been affected by the size of class (e.g., in terms of the size and number of groups, composition of the groups in terms of age, ability and friendship etc, curriculum task and activities, teaching approaches).

2. Method

The Class Size and Pupil Adult Ratios (CSPAR) study was a large scale project that tracked pupils' educational progress from 5 to 11 years in relation to class size and Pupil Teacher Ratios (PTRs), as

well as research in a systematic way the relationships between class size and classroom processes. There is not space here to give a full background to the overall study or results from it (see references to CSPAR project above). A multi-method approach was developed and as well as information on class size, pupil teacher ratios, pupil academic attainments, ratings of behaviour in class and systematic classroom observations, we also collected data on teachers' experiences through questionnaires and case studies. In this paper we concentrate on data from these last two forms of data collection. Although there are inevitable issues relating to potential bias and subjectivity, it was felt that engaging with teachers themselves would be needed in order to get insights into, and details of, the dilemmas and other considerations behind their decisions about classroom management, and how these were connected to class size and within class groups. There were two forms of data collection used: questions in an annually administered questionnaire at Y4,5 and 6 (i.e., when pupils were 8-9, 9-10 and 10-11 years respectively) which was answered by a large group of teachers, and also by questions about grouping practices asked in the interviews with teachers and pupils as part of detailed case studies with a smaller sample of schools. More details are given below.

2.1 Sample

The KS2 (7-11 years) phase of the research followed for a further four years a large cohort of pupils in 202 schools (described in Blatchford, 2003b) and was comprised of the following types of schools:

1. 75 Schools who were part of the KS1 (5-7 years) study of Class Size and Pupil Adult Ratios Project and had agreed to continue with the research.
2. 17 Schools not previously part of the research, but now attended by pupils who were part of the KS1 study, e.g., having transferred after attending neighbouring infant schools.
3. 110 Schools not previously involved with the study ('New Schools').

Additions to the sample at KS2 were designed to lessen the effects of attrition and balance the mix of schools from different regions. The sample was broadly representative of the national picture in England. Further details on characteristics of the pupils, teachers and schools involved in the KS2 research can be found in Blatchford, Russell, Bassett, Brown, and Martin (2004).

Details of class sizes in each year are shown in Table 1.

Table 1 Details of class sizes on school registers

	Number of pupils					
	20 or less	21-25	26-30	31 or more	Total	Average
Y4	10 4%	40 16%	109 45%	84 35%	243 100	28.5
Y5						
Reg class size	6 4%	23 16%	74 53%	36 26%	139 100	28.4
Y6						
Reg class size	123 16%	123 16%	286 38%	220 29%	752 100%	26.8

2.2 Data Collection

In this paper the main forms of data collection were:

1. *Data on class size, pupil-adult ratios and TAs*: this came from questionnaires completed by all teachers which asked about numbers of pupils on the register and at given times during designated times and days.
2. *Teacher questionnaires (TQ)*: for the whole sample, teachers completed questions on biographical details and views and experiences on a range of issues. In this paper, answers to one question from the annual TQ concerning grouping practices were analysed. There were 486 questionnaires returned altogether, 206 in year 4, 184 in year 5 and 96 in year 6. The questionnaires comprised a mixture of open ended and closed questions on a wide range of topics related to class size. At Y5 and 6 the question analysed here to answer the first research question was designed to elicit a factual description of the actual methods of grouping used by teachers in their classroom: 'Please explain how you organise groups of children in your class (e.g., in terms of ability, age, friendship, compatibility) with particular reference to size of class.' At Y4 the question used to answer the second research question was designed to allow teachers to give a more detailed description of how class size had affected grouping practices.: 'Have grouping practices been affected by your size of class this year? For example, size and number of groups, composition of groups (ability/age/friendships), curriculum task and activities and the presence of adults.' The question was designed to provide teachers with the freedom to describe grouping practices as completely as possible, whilst giving them some pointers to the areas we were intending them to cover. Responses to the two questions analysed here were open ended. All the responses to the question in each year were typed out and copied into one document to facilitate their analysis. A coding frame was developed for each question and agreed between two of the researchers, and then used for all data analysis. There was a high level of agreement (better than 80%) when a sub sample of responses were coded.
3. *Case Studies*. For a sub-sample of schools, data were also collected from case studies of small and large classes in years 5 and 6. These aimed to provide a more detailed portrayal of individual classes, and allow a more interpretive and grounded analysis of factors related to size of class and the deployment of TAs. Ten case studies were carried out in six Local Authorities in Year 5 and ten case studies carried out in six Local Authorities in Y6. In each year, five classes were randomly chosen from those that had 25 pupils or less pupils ('small') and five were randomly chosen from those that had classes of 31 or more ('large'). Each visit included semi-structured interviews with teachers and three pupils selected by the researcher from a list of six provided by the class teacher who in turn represented the low, average and high attaining groups within the class. The interviews were carried out at times and in locations which suited the schools. Each interviewee was seen separately and in privacy. The interviews with teachers and pupils followed schedules of questions organised under headings prepared previously and the conversations were taped for later transcription.

4. Results

3.1 How teachers organised groups of children in their classes

The methods used by teachers in Y5 and Y6 to organise groups of pupils are shown in Table 2. More than one code could be applied to cover a teacher's response, e.g., because they allocated children to groups on the basis of ability and friendship. The number of codes therefore exceeds the number of teachers (80 in Y5 and 107 in Y6 - not all teachers returned questionnaires).

The table shows two things. The first is the prevalence of organising children into groups on the basis of 'ability'. A measure of this can be calculated by summing codes Aa-d. In Y5 this amounted to 56 and in Y6 the total was 96. The appropriate denominator, in order to give a measure of the incidences of organising by ability, regardless of whether teachers also used other methods, is the

number of teachers. This means that at Y5 $56/80=70\%$ and Y6 $96/107=84\%$ used ability grouping, very high figures.

The second feature of the results in Table 2 is the wide range of strategies teachers use overall. At various times teachers allocated pupils into groups on the basis of mixed ability only (n=7, 5% of all occurrences), friendship (14,21%), the compatibility of pupils (10,10%), to separate pupils with behaviour problems (6, 5%), as well as age/year group and gender. So, despite the prevalence of ability grouping, there is also evidence of a complex and sophisticated set of decisions about the composition of groups in the class.

Table 2. Y5 and Y6 TQ responses re grouping practices (N= 80 & 107)

Codes	Criteria	Y5 no. of responses	% of total responses	Y6 no. of responses	% of total responses
A	Ability				
ai	English in class	3	1.7	6	2
aii	English in sets	0	0	0	0
bi	Maths in class	3	1.7	1	0.3
bii	Maths in sets	1	0.6	5	1.8
ci	Eng.& Maths in class	40	22.1	54	19.7
cii	Eng.& Maths in sets	9	5.0	14	5
d	All subjects	13	7.2	4	1.4
e	Eng & Maths + others	9	5.0	12	4.3
f	Mixed ability-only criterion	13	7.2	15	5.5
fi	Friendship	26	14.4	56	20.5
fii	Free choice	2	1.1	4	1.4
fiii	Compatibility	18	10.0	27	9.8
fiv	Separate behave. probs.	11	6.1	14	5
g	Subjects not specified	8	4.4	20	7.3
B	Age/year group	8	4.4	8	2.9
C	Gender	2	1.1	10	3.6
D	Various/unspecified	2	1.5	8	2.9
E	Task	10	5.5	8	2.9
F	Space	1	0.6	5	1.8
G	Not clear/no answer	2	1.2	2	0.6
	TOTAL	181	100	273	100

3.2 How have grouping practices been affected by size of class

In line with what has been said so far, the most obvious overall theme to emerge from most Y4 teachers' responses was the way that class size affects grouping practices through its effect on the size and the number of groups in the class. As we have seen, in a situation where every teacher organised their class into smaller groups this relationship with class size is bound to happen.

Apart from this general and near universal trend, all of the responses were categorised into ways in which class size was seen to affect within class grouping practices. There were six codes: classroom

management, teaching methods, characteristics of the pupils, use of TAs and other adults, and space and resources.

3.2.1 Classroom management

This was the most frequent response from teachers with 63 out of the total of 89 (71%). As class size increased, within class groups became bigger than the teacher would ideally like and this had implications for the management of groups in the classroom, as well as negative effects on learning and behaviour. As one teacher said: 'how could it not be!'

The following quotes express the connection between class size, groups and classroom management. The quotes are verbatim transcripts of the teachers' written responses. Class size is given in parenthesis.

(33) I can only teach effectively with a maximum of 4 groups therefore the size of 3X8 and 1X9 is unmanageable for effective teaching and learning. A group of 6 is ideal.

(37) Have had to have 6 guided reading groups instead of 5. Children have had to

- a. share textbooks for most subjects. During carpet sessions, children are cramped and*
- b. if a text is produced in a small font it has been difficult for some children to see / read.*
- c. I have had to have larger groups than I would like in literacy. It takes a long time to*
- d. get round the whole class using the computer.*

In the above quote, class size affects the size and number of within class groups which in turn affects allocation of resources and use of space in the classroom (see below for more on these two consequences).

The next quote shows the complex interconnected management problems that result from large class sizes and a desire to organise the class into homogeneous (by attainment) groups.

(36) Too many children in some groups arranged by ability. E.g. I have 2 tables of high-achieving children, each with 7 children which makes teacher-guided work difficult in literacy and numeracy. I can't push tables together as it would mean 14 children all together, can't work with each separately as won't correspond with rotating schedule for numeracy / literacy and can't talk to 2 tables at once. In effect I have 7 smaller groups in my class – doesn't fit in with 5 day week!

Teachers with relatively small classes expressed the classroom management consequences of the relationship between class size and groupings in a positive way, showing how a relatively small class means smaller and fewer groups with the result that each group receives appropriate input from the teacher.

(24) With a smaller class the groups have been better organised because I have found the optimum size of groups in Literacy to be about 5 or 6. This has allowed me to work with 4 or 5 groups which can all be seen in the course of one lesson or during the week.

3.2.2 Teaching methods

In the second category of response (18/89 =20%) teachers commented on ways in which their approach to teaching was affected by the size of the class and groupings. This was expressed in several ways, the most common being the way that smaller classes result in smaller groups which in turn results in more individual time, support and input from the teacher:

(21) Smaller groups – more focused input by class teacher. Other adults – more focused input by class assistant raising confidence and self esteem

(23) Small groups, giving more individual attention from the teacher, pupils more on-task.

And the converse applies with larger classes:

(32) Group arrangements for literacy and numeracy are more difficult, especially with mixed ability and mixed age classes. Some groups can be (too) large and, therefore, it is difficult to support individuals as much as you would like to.

For many teachers, a key feature of effective teaching is appropriately differentiating teaching for pupils with different attainment levels and needs, and it is frustrating for them when large class sizes make this more difficult. Here the benefit of a smaller class for differentiation is recognised:

(12) Able to allow more group work and differentiate easier.

Another sub category of responses in this section showed how larger classes and groups makes the conducting of practical activities and tasks more difficult.

(32) I have had to abandon literacy carousel because such a large English group (34 pupil). There have been occasions where children have found it difficult to tackle practical tasks because the room is overcrowded. Extra desks/chairs/tables required and space for laying out of equipment is limited.

3.2.3 Characteristics of pupils (20/89 = 22%)

Relationships between class size, groupings and classroom management were also affected by the characteristics of the pupils in the class, e.g., a larger class size results in larger groups of low attaining pupils or those with SEN and behaviour difficulties, who need more support.

(35) Because the class is large, groups have to be bigger... If the children are sat in ability groups the less able group is often larger than desired due to class size.

(35) The children are grouped to ability which means having some large groups for guided reading. There is a very wide ability range within the class and a large number of disruptive children who are unfortunately in the same groups.

A connected problem for teachers is that a larger class means it is more difficult to compose groups for teaching and classroom management, e.g., when wanting to separate pupils with behaviour problems.

(32) High percentage of pupils with behavioural problems (major and minor) therefore groupings difficult (avoid these pupils being together)

(28) Grouping has to be done so that SEN children always have enough support and so that some can be separated from each other.

Moreover, with large class sizes the spread of ability in a class makes organising groups for learning very difficult:

(32) Literacy group work /numeracy group work included group sizes of 8+, which was unworkable to adequately meet objectives. Spread of ability resulted in children struggling to work independently.

3.2.4 Use of Teacher Assistants (TAs) and other adults (13/89=15%)

Another category of responses concerned the role of Teaching Assistants in the connection between class size and within class groups. TAs are often used to help teachers manage the problem of attending to all children and groups in the class, and this is made more pressing with increasing class size. Certain activities, e.g., practical activities, are only conducted when TAs are present.

(31) The size of the groups has been larger than should be this year and for numeracy and literacy has been based on ability. One group always has an adult working with them – normally the lower ability. Practical activities are carried out only with the presence of other adults.

(32)... having to have a TA to help with guided reading because the groups would be too big for specific activities and learning. This goes right across the curriculum.

There is also a recognition in the following quote that TAs are not always able to cope with the demands of teaching a group

(29) My 6 Low Attaining group are 'too much' for the TA – therefore have to be sent ½ at time on occasions so not all benefit from her input.

3.2.5 Space (13=15%) and resources (11=12%)

Another connected factor is the use of space and resources in the classroom. Often these two features were seen to be connected. In a quote above we saw that one consequence of a large class is that there is more pressure on text books and computers, with pupils having to share for most subjects, and pressure on space, with pupils cramped in the classroom. In the next quotes, the sheer physical problems resulting from large class sizes and the layout of the room in tables can adversely affect classroom management and movement around the classroom.

(35) Because the class is large, groups have to be bigger and often can't sit together because furniture restricts group size. Tables have to be moved for the lesson to enable the group to sit together. If the children are sat in ability groups the less able group is often larger than desired due to class size.

(32) Fewer spaces around the desks, un-cooperative children have to work in more confined space so become more un-cooperative. Movement around the classroom in less structured lessons curtailed: friends cannot work together without disruption of larger groups.

In the following quote we see how a smaller class has benefitted from more space between groups:

(26) Because of more space, certain individuals can be separated by physical space and at the same time work in groups appropriate to ability level.

3.3 Case Studies

In this section, attention turns to the case studies of Y5 and Y6 large classes, and in the interests of space we focus on the interviews with teachers and pupils in large classes (31 or over).

The interviews with teachers showed that larger groups, which were the consequence of large class sizes, had negative effects on teachers and on pupils. Teachers linked this negative effect largely to the reduction in the amount of individual attention from the teacher, which led to less differentiation of work. It was also felt that as groups get bigger less work gets done and is of lower quality, and the groups are more difficult to teach. The alternative consequence of a large class, i.e., an increase in the number of groups, is felt to have if anything an even more negative impact with all teachers agreeing that it is difficult for teachers to get around to them all. Here are some indicative quotes from teachers. Quotes are from researcher verbatim descriptions of interviews.

Y5 large class teacher interview

B – More seated to avoid trouble, all in designated places. Bizarre behaviour, ‘rat syndrome’, demanding attention, antagonise one another. ...More in each group - much more difficult for teacher – organisation, preparation, group dynamics change. Pupil progress suffers, teacher is divided, can’t get round, no real quality. Teacher rushing, more pupils, more flaked out. More groups – a complete nightmare. Lose quality in literacy, no time to do it all. Pupil progress - depends on activity, e.g. PE, lots of small groups is ideal, but in core subjects, a nightmare, everything is decreased.

C –...Pupils’ progress hindered and teacher gets run ragged. Top not stretched, bottom floundering. More groups – still very difficult, hard to get round, pupils left stuck / waiting. Progress hindered. Can’t get round the groups, key is interaction with teacher, when they need it.

Y6 large class teacher interviews

D - Larger class - have to have bigger groups. I don’t like more than 6 per group. Larger groups - planning and marking affected. ... ask TA to mark some writing. The less input I can have into them, the less focused they will be. It slows them down, there’s no two ways about it. More groups - ... have to do two literacy groups per day, with less time per group and more independent work. Less attention to each pupil.

C - ...Larger groups - Detrimental effect on pupil progress, with more attention to groups rather than individuals. Progress slowed down for some. Less time per pupil and less time to plan differentiation. More groups - unmanageable to try more than three levels of differentiation, so several groups...at one level. ... Less teaching input per group, so progress slowed.

Pupil interviews

The pupil interviews at Y5 and 6 were consistent in showing a general preference for working with other pupils and working in smaller groups.

Interviews with pupils in Y5 large classes showed that ten report that they mostly work alone, but this arrangement is only favoured by three of them. The majority would rather work in groups of two or more, and they are sure that small groups are better than large ones. Their reasons range over issues of noise, difficulties in reaching a consensus and space for work. The benefits of ‘more brains’, cited by one pupil, is offset by the higher probability of arguments and inability to agree on what to do.

Interviews with pupils in Y6 large classes showed that although three quarters (73%) say that they mostly work alone, only a quarter prefer to work like this. For working as a group, the figures are reversed, with 27% saying this is what they do most of the time, but 73% saying they would prefer to work with others. The reasons for preferring to work as a group are cited as: help is available/it’s easier to get (6), they get more ideas (3), they share abilities (1) and it is quicker (1). Those who prefer working alone give the following reasons: they get more done (1), it is easier to concentrate (1), they don’t like their nearby pupils(1) and they like to try their best (1).

Only one pupil liked to be in a large group, because they felt they had access to more ideas. The other 14 pupils had a wide range of reasons for preferring small groups: it is less crowded (3), it is quieter and easier to talk (2), they can work as a team (1). All other reasons are in the form of negative comments about large

groups: everyone talks at once and no one listens in a large group (6), large groups are complicated and confusing (2), work is slow and time is wasted (2), arguments occur and there are too many ideas to choose from (2), silly pupils do not work in a large group (1) and you have to work with people you don't know or don't like (1).

Here are some indicative quotes from pupils.

Y5 pupil interviews

A - Prefer working with others, can share answers, add them together. Prefer small groups, less shouting, people speak one at a time. I like it small. Cos like you don't have to ...other people are shouting out their ideas and you don't have to speak over them and like if you're in a small group, they say it one at a time and the others in the big group, they shout it out.

J - Prefer smaller groups, less arguments, no one left out. ...

Y6 pupil interviews

D ... Mostly work alone. Prefer working with others as it's easier, because you can ask for help. Prefer small group, as large ones can be 'annoying' through people all talking and not listening. Work is slowed down too.not too many talking at once. ...

C -Mostly work with others, which I prefer. They can help with the work when stuck. Prefer small group. If large, it may have some you don't know or get on with.. .. time wasted in large groups.

L ...Mostly working alone. Prefer working with others, can share abilities and get more ideas. Prefer small groups because in large groups everyone shouts out their ideas, as they can't wait. Small group is quieter.

Q - ...Prefer working with others. Like small groups best because it's easier to talk to one another and you can work together as a team, without a lot of distractions. Large group gets complicated...Mostly work with others, which I prefer, because you can share your opinions and decide what's the best. Prefer small group, 'cos it's not as much hassle. In large group means more silly people who won't really work.... Prefer working with others, because there are more ideas and it gets done quicker.

5. Discussion

4.1 Classroom management and teaching

One of the limitations of the research literature on class size effects is that it has been primarily concerned with associations with pupil academic outcomes, and there has been little attention paid to class size effects on important classroom processes. Despite the enduring arguments about class size and its importance to educational policy making, understanding of class size effects and how they inhibit and facilitate learning is in fact woefully thin.

To help with this problem this paper has explored, on the basis of a detailed analysis of teacher completed questionnaires and interviews with teachers and pupils as part of case studies in schools, the complex ways in which class size affects classroom groupings and classroom management. It is recognised that there are inevitable validity and reliability issues connected to the reliance on teachers' perspectives and reported experiences, but it is argued that it is helpful and indeed insightful to develop a practitioner eye view of the way class size works. Of course, it is possible that teachers are mistaken or exaggerate but the consistency of results supports the plausibility of the findings and relationships presented in this paper.

We have seen the way that increases in class size necessarily lead to bigger or more numerous groups, and pressures on space and resources, and that these features and the mix of characteristics of the pupils in the class also sets the context for important but difficult classroom management and teaching decisions.

The results indicate that to understand class size effects we need to be aware of the relationships between several separable categories of factors:

1. fixed classroom contextual factors like class size, which affect:
2. within class contextual features like the size and number of within class groups, which affect:
3. contextual factors of space and resources available, which are affected in turn by:
4. set student characteristics like the mix of attainment levels and gender, extent of behaviour problems and SEN, which in turn provide the basis and context for:
5. classroom management decisions and teaching (including the deployment of paraprofessionals) and:
6. effects on pupils.

4.2 Social pedagogical view

The evidence in this paper suggests that instead of approaches which only consider statistical relationships between class size and pupil attainment, as in much previous research, we need now to develop a view of classroom effects on learning that recognises and seeks to capture the interconnected nature of the contextual, interactive, interpersonal and other features at work. We argue that class size is best conceived as a context for teaching and learning that interconnects with other classroom contextual features like within class groupings. It is these interconnections, and, in particular, the way that teachers manage groups in the class, which are the key factor when considering effects on educational outcomes. This classroom management facet of the reality of large classes can get lost in the debate on class size effects. It seems to us very likely that the number of children in a classroom does not directly impact on attainment, but works through the many moment by moment difficult decisions teachers have to make about how best to manage and teach pupils, given contextual realities like class size and the characteristics of pupils in their classes. The accounts from teachers show the strain it can put on them and it seems likely to adversely affect the quality of teaching and the quality of work produced.

Blatchford, Kutnick, Baines, and Galton (2003) coin the term 'social pedagogy' to help show how learning in schools is not simply the result of teachers exerting an influence on pupils but that learning takes place in a distinct physical and social setting within which complex, multiple decisions are taken about how to best coordinate and manage the various factors involved, including class size. This was taken further by Kutnick and Blatchford (2014) and is currently being developed by the authors in a book length treatment (Blatchford and Russell, in preparation). The search for the interconnections between class size, within class groups, teaching approaches, wider pedagogical concerns and curriculum areas strikes us as a far more meaningful exercise than stale debates over associations between class and pupil outcomes.

4.3 Important issues for classroom management and pedagogy

In terms of how a teacher can organise the class into groups for learning, there are three main options: first, organising the class in terms of individual pupils, with individual work and individual support; second, organising the class for whole class teaching, that is, treating all the class as one group; or third, organising the class into smaller within class groups.

The first option in a sense would follow from the often implicit pedagogical preference of many UK teachers which stresses the value of maximising the individual support for individual pupils. However, this is in practice difficult to operationalise in a conventional classroom context, and may not even be socially or pedagogically desirable. Turning to the second option, it might be argued that one solution to the teacher's difficulties with large classes would be to alter their approach so that there is more teaching to larger groups or the whole class. This may be possible in some activities in some curriculum areas, but it is not a sufficient approach to teaching the whole curriculum when, as in Britain, there are often wide differences in attainment levels within a class. Whole class teaching can be used in a productive way, but whole class teaching forced on teachers as a compromise in the face of larger class sizes is a different matter.

We now turn to the third option: teaching in relation to within class groups. There seem to us two separable issues here. The first concerns the appropriate role adopted by teachers when teaching with small groups. Although not shown in the results here, the overall picture revealed by the case study observations is that considerations of group sizes, numbers and composition seem hardly relevant from the point of view of teaching and learning, since so many pupils in reality spend little or no time working together on tasks with their peers. Class control and management concerns were dealt with by allocating pupils to particular groups, located in places around the room, chosen by the teacher, but for most of the time, the grouping practices were nothing more than a way of managing the seating arrangements. This is because most time was spent listening to the teacher in whole class mode, or getting on with their own work in isolation from (though in close proximity to) other pupils.

The important issue here is whether we are making the best use of grouping by ability and the most efficient use of teaching time. The point of ability grouping presumably is that pupils within each group are closer in levels of knowledge, attainment and skill and therefore make it easier for teachers to provide explanations and support. But we have found little evidence of differentiated tasks and teaching for the various groups in the class. Instead, teachers tend to support individual pupils within groups. In the interests of effective forms of differentiation within classrooms, we need to develop efficient ways of teaching to smaller groups and this is likely to be particularly helpful for teachers faced with larger overall class sizes. An alternative approach to differentiation involves allocation of pupils to whole classes on the basis of academic 'ability' or attainment (called 'streaming' in the UK when for all subjects and 'setting' when for particular curriculum areas, and 'tracking' in the USA) but this approach is now being questioned by research findings (Baines, 2012; EEF, 2018), and in any case still requires attention to groupings within these sets. Overall, we need to develop effective strategies for within class groupings

The second issue, when it comes to teaching within class groups, concerns collaboration between pupils within groups. One of the most striking things to emerge from the Y4 TQ responses was that, despite the fact that all pupils were allocated to groupings, there was next to no evidence of pupils working collaboratively in these groups. Indeed, classroom observation studies show that collaborative group work remains an unusual feature of pupils' experience (Kutnick and Blatchford, 2014), which is unfortunate if it is accepted that collaborative group work has a positive impact on learning and skills of negotiation, communication and argumentation. What is more, it runs counter to the case study pupil interviews where it was apparent that pupils liked the experience of working with others, and preferred it to the alternative of individual work. Their reasons were various, but involved benefits in sharing ideas, cooperating, comparing ideas and selecting the 'best', hearing other's opinions and covering the work at a higher rate, as it is a shared activity.

Given the ubiquity of groups in classroom organisation it seems to us that more could be done to use groupings strategically as the context for collaborative group work. Although most British primary school classrooms organise and seat pupils in groups, evidence suggests that teachers do not always consider group size and composition in relation to the pedagogic content of learning tasks, and do not equip pupils with skills for effective collaboration and cooperation (Kutnick and Blatchford, 2014). Kutnick and Blatchford identify a number of 'resistances' to high quality group work and teachers and pupils often found group work hard and not very productive. To deal with these issues, a year long development project was undertaken with teachers to develop an approach to group work which, in contrast to much previous work, covered the whole school day and curriculum (see Baines, Blatchford and Kutnick, 2016). The programme (SPRinG) involved three key principles built around maximising the social pedagogic potential of classroom groups: preparing pupils for group working through training in social and communicative skills; helping teachers adopt a supportive role for groups; and ensuring that the classroom environment and learning tasks supported group work. The programme was evaluated in a year-long quasi-experimental study and found to have a clear impact on academic progress in science, English and mathematics and also on productive interactions between pupils (Baines, Blatchford and Chowne, 2007; Blatchford, Baines, Rubie-Davies, Bassett, and Chowne, 2006). There were also benefits for classroom management in terms of pupils becoming more independent and freeing teachers up for more productive monitoring activities (Kutnick and Blatchford, 2014). Kutnick and Blatchford show that the background issues and success of the programme are likely to be found in many countries around the world.

Alexander (1992) argued some time ago that the strategy of grouping in British primary schools had become an end in itself rather than a device adapted for particular educational purposes. He identified a mismatch between the ostensibly collective strategy of grouping on the one hand and the predominance of individualised work tasks and the teacher's predominantly individual or whole-class mode of interaction, on the other hand. It seems from the evidence in this paper that a large class size exacerbates this mismatch and the dilemmas it presents for teacher. Alexander's call for an 'urgent...look at the justifications, dynamics and effectiveness of grouping' (p68) still seems current. Developing a strategic approach to teaching groups and to collaborative learning in groups are important in their own right, but are also ways in which teachers can help deal with the management problems we have seen resulting from large classes.

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