Rethinking Class Size. A question and answer session with Peter Blatchford about a new book and approach to the class size issue

Peter Blatchford

Emeritus Professor in Psychology and Education

UCL Institute of Education

Abstract

The issue of class size is a complex and contested topic that has divided opinion for many years. Whilst many teachers believe that smaller class sizes assist in enhancing outcomes, a number of policy influencers, policy makers and researchers argue that it has little influence on success in learning and that decreasing class sizes is not cost-effective. This article reports on over 20 years of research on this topic that is embodied in a recent text entitled *Rethinking Class Size: The Complex Story of Impact on Teaching and Learning* by Peter Blatchford and Anthony Russell of the University College London Institute of Education. The book offers an extended exploration of how class size affects key classroom processes including teaching, classroom management, peer relations, groups in the class, marking and other administrative teacher activities, as well effects on teachers themselves. The article is based on a question and answer session between one of the authors of the text, Professor Peter Blatchford, and his colleague at the UCL Institute of Education, Matt Somerville.

Key words: class size, classroom processes, curriculum, classroom management, class groups.

Introduction

The class size issue is one of the most long lasting and acrimonious in education. There is a main difference of opinion. While many teachers feel that a small class is better for teaching and learning, a number of policy influencers and researchers argue that class size is relatively unimportant and that reducing class sizes would not be an effective strategy or cost-effective strategy.

Peter Blatchford and his colleagues have been researching and commentating on the class size topic for over 20 years now. In a recent book *Rethinking Class Size: The Complex Story of Impact on Teaching and Learning* (free to download through this UCL Press link: uclpress.co.uk/size) Peter and his colleague Tony Russell reflect on this work and provide a new perspective on the class size issue. The book is based on their multi-method and large scale Class Size and Pupil Adult Ratio (CSPAR) study, and more recent projects including the Deployment and Impact of Support Staff (DISS), Making a Statement (MAST) and Special Educational Needs in Secondary Education (SENSE) research projects. On the basis of this work they argue that much research and commentary on class size is limited and misleading because it does not consider pupil 'outcomes' other than attainment in first language and maths, and it does not study what goes on in classrooms which might account for class size effects (or the lack of them). The heart of the book is an extended exploration of how class size affects key classroom processes: teaching, classroom management, peer relations, groups in the class, marking and other administrative teacher activities, as well effects on teachers themselves.

Here we print a question and answer session between Peter and his colleague at the UCL Institute of Education Matt Somerville. One reason for the interview was to provide current IOE Masters students with some direct insights into the research they would be studying from the person who directed the research. But we thought the format worked well in providing a personal and historical perspective on the class size debate and the background and rationale to the main UK research study. It provides practical and policy suggestions and should be of interest to readers of Education 3-13.

It also provides insights into the theoretical basis for a new approach to class size effects. For the period 2017 – 2020 Peter worked on a Leverhulme funded Major Research Fellowship and during this time sought to develop a conceptual framework to help integrate findings on class size and classroom processes. As you will see, Peter starts from the perspective that we tend to underestimate the immediate 'proximal' classroom context when thinking about teaching approaches. He explains how ecological psychology, in particular, is a useful way of conceptualising the context and its effects on participants. He argues that the effects of class size on student attainment are probably not direct but have force through complex interconnections with classroom processes like teaching and classroom tasks. The findings from their research are integrated in terms of a new social pedagogical framework of class size effects.

1. ***What led you to begin researching classroom contextual factors, and particularly class size?***

I have had a long-term interest in teacher-perspective interactions. This grew out of my PhD work in the 1970s in the field of developmental psychology, in which I began to investigate the use of observation methods for studying interactions between young children. I learned about observation techniques used by early classroom researchers, ethologists studying animal behaviour and linguists interested in classroom language. When I moved to the National Foundation for Educational Research in 1976 and then on to Thomas Coram Research Unit (part of the IOE) in 1980 I began to apply this interest to studies looking at teaching approaches in infant and junior schools – as a way of trying to get a reliable hold on essential features on interactions and perhaps ways of getting a handle on what might count as effectiveness in teaching.

As I progressed further with this work I realised more and more there may be a problem with the tendency to consider learning only in terms of what the teacher does. Even when we realise that pupils themselves also affect the nature of the interaction, there is still a tendency to see teacher-pupil relations in a contextual vacuum.

Recently, as part of my Leverhulme funded Major Research Fellowship, I have been studying the philosophical and psychological roots of the view that contexts are downplayed in theories of human development. There's a wonderful book by Harry Heft with the rather unappealing title: *Ecological Psychology in Context: James Gibson, Roger Barker, and the Legacy of William James's Radical Empiricism* in which he explored this idea and champions and traces the roots of a neglected approach called ecological psychology. The key figure is Roger Barker. I'll come back to this work a little later but here I want to make Barker's interesting point that psychology has been handicapped historically because of a lack of a coherent framework to describe the environment within which individuals live. Psychology has been almost exclusively concerned with individual subjectivities and rarely with analysing the environment that would enable commonalities between individual perceptions. We see this in well-known theories of cognitive development, for example those of Piaget. And, as Harry Daniels (2001) has pointed out, even Vygotsky, who certainly stressed the social origins of development, was not really interested in understanding the specific contexts within

which children develop. In contrast, ecological psychology takes the view that this is a problem because the immediate, 'proximal' environmental context has meaning and impact independent of the perceiver – which explains why there is a fair degree of commonalty in our perceptions.

Another point made by Barker (1968) is that historically psychology is alone amongst disciplines in from the outset being predominantly theory driven and experimental. He said something quite profound I think: unlike other natural sciences, psychology has never had a well-developed descriptive phase. He regrets this limitation, and it led to his efforts to study naturally occurring behaviour. It reinforces for me the value of careful descriptive, observational studies of what goes on in naturally occurring contexts within schools (and in everyday life).

This has been a feature of my research. In the main studies I have directed - CSPAR, DISS, MAST, SENSE, as well as the SPRinG collaborative group work project – we have make extensive use of systematic observation observation methods to capture everyday pupil behaviour (see Blatchford et al, 2005, 2006, 2009, 2011; Blatchford and Webster, 2018). Also in my ESRC funded work with Peter Kutnick and Ed Baines on grouping practices and group work we developed a different kind of observation approach – a Classroom Mapping technique, which requires the researcher or teachers to draw a map of the classroom and then enter onto the map at a given time in the school day the position of the children and adults and the within class groups, along with their size, composition by attainment and gender, and the type of tasks and types of interactions.

What does this mean for the class size issue? The classroom mapping technique is a useful way of showing visually one of the main and distinctive features of the classroom environment: the rather odd arrangement where we have usually one teacher (though often these days other adults as well, particularly TAs) and numerous children. Sometimes in the UK class sizes are over 30 pupils and this is different to other environments inhabited by children, especially the home. We argue that the number of children in the classroom has important implications for teachers and for pupils, and it affects the nature of teaching and learning.

For many years the topic of class size – i.e., the number of pupils in a classroom - has been highly contested. The debate has been enduring and sometimes aggressive. Essentially it comes down to the difference of opinion between practitioners who think larger classes adversely affect teaching and learning, and the view of policy makers and academics who think class size is unimportant.

In the Rethinking book we show that this debate has been happening across the world – in the USA, the UK, Australia, New Zealand, Canada, France, Norway, Hong Kong and other countries in East Asia. In the UK the debate is given extra force because class sizes are quite large – the fourth largest in the OECD regions – and, unusually across the world, class sizes are larger in primary schools compared to secondary schools.

In my view much existing commentary and research on class size, which supports the unimportant view, is often simplistic, and arrives at misleading conclusions. We seek to show why in the book, and why we need a new approach.

2. ***The evidence regarding the impact of class size seems to be rather mixed –for example, we have the econometric analyses, like Hanushek's work, arguing that class size has a relatively trivial influence on academic progress and also the findings of your own research, the CSPAR***

study, which indicates that headteachers, teachers, and TAs believe the opposite. I quite liked what you said about this debate in your book – I'll quote from it now:

> ***"the problem here is not that practitioners are in denial about hard objective research evidence as some researchers have implied, but rather that some researchers and policymakers are not interested, and perhaps not competent, in investigating the effects of class size on what goes on in classrooms.***

Can you tell us how you came to this position?

The quote from the book comes near the end. It's strongly expressed and reflects my view that some research and commentary implies that teachers are self-serving or mistaken in their view. I am not so sure about this.

In the 'Rethinking Class Size' book we seek to explain the difference of opinion between practitioners and policy/research voices. Essentially, it seems to me that the gap between the views of practitioners and the evidence from researchers, policy makers and others is likely because the two lobbies have different kinds of pupil outcomes and a different model of effects in mind.

Researchers are essentially only interested in the correlation of measures of class size and academic attainment in first language and maths. But teachers' confidence in small class effects is likely I think to be based on a wider and more informal perception of pupil functioning and a more complex, interconnected set of processes. In my view we need to look at pupil outcomes in a broader sense than that in most research, that is, not just academic attainment in first language and maths. We need to look at the impact on a range of subject areas, and also things like critical thinking and the ability to work collaboratively together – what some have called 21st C skills.

We'll come to this later when we talk about our research on classroom processes, but in our view much research on class size also doesn't really get to grips with class size effects because it fails to look closely at what goes on classrooms – at teaching, at classroom management, at peer relations and groups in the class, at marking and other admin teacher activities, at the tasks teachers, and at effects on teachers themselves.

So one explanation of the wide divide in opinion is that teachers are not so concerned with academic attainment as measured at a given point in time but with class size in a more dynamic way as it affects the everyday processes of teaching and learning considered broadly.

To come back to the quote from the book: For me some researchers rather patronise teachers, when it may be more about the researchers not understanding or having the research methods in place to address the everyday effects of class size.

3. ***What is your view on how class size is discussed in the different meta-analyses. For example, the Educational Endowment Foundation say it is very expensive and that the effects aren't clear until numbers are reduced to lower than 20 or 15. And I've heard John Hattie say, based on his meta-analysis, that class size doesn't matter much.***

Meta-analyses of class size effects are probably the most widely sourced evidence on class size effects. The main ones are those of Hanushek (1999, 2011), Hattie (2009) and in Britain the Sutton Trust Toolkit Teaching & Learning Toolkit (Higgins et al. 2013). They are attractive because they collate lots of different studies in terms of a common metric and arrive at a seemingly definitive and easily understood way of evaluating class size effects. The common conclusion of meta-analyses is that class size reductions are less effective than other and less costly alternative strategies. Rather perversely, the recent Campbell Collaboration meta-analysis (Filges et al. 2018) even concludes that small classes may actually be a bad influence on some children in maths.

There have been a number of strong technical critiques of meta-analyses (e.g., Ehrenberg et al., 2001; Biddle and Berliner, 2002; Krueger, 2000, Whitmore Schanzenbach, 2016), but I have a couple of more general problems with the conclusions that have been drawn from meta-analyses.

One problem behind the conclusions drawn from comparisons with other strategies is that it is not really a fair test. Educational initiatives, with which class size reduction (CSR) is compared – such as reciprocal teaching, feedback, teaching meta-cognitive strategies, direct instruction and peer tutoring – are distinctive *methods* of teaching, while CSR merely sets limits on the numbers of pupils in a class involved. The number of pupils in a class or a measure of pupil–teacher ratios are contextual features of the classroom, like the size of the classroom or the layout of the room. For a fairer test, we would need also to take into account what teaching and instruction would be appropriate in classes of different sizes.

We feel that class size reduction is therefore only appropriately labelled a specifically educational intervention when pedagogical changes are also made. But the important to thing to say here is that we have next to no systematic research on the impact of these changes along with class size reductions. We need good evaluations in which we test and compare the impact of class size reduction plus different forms of pedagogical changes.

But there is an even more important problem. The key limitation I think is that meta-analyses only deal with the relationship between a measure of class size (even this is sometimes not really class size but pupil teacher ratios as in Hanushek) and a narrow measure of pupil attainment usually in maths and first language. Although the statistical analyses are often sophisticated, the underlying assumptions are not. The relationship between class size and pupil outcomes is dependent on what teachers *do*. Let's take an example. It's quite likely that teachers in large classes adapt by teaching more to the class and focus more on the basic subjects of literacy and maths and it's this which may well help reduce the attainment gap in these subjects with small classes. We also have evidence that teachers may compensate for a large class by doing extra work, e.g., at lunchtime, and taking lots of marking home, which can be at some expense to themselves. So teachers soak up the consequences of large classes and this may be one factor in teachers leaving the profession. There's a converse situation identified by some studies: teachers in small classes may go on teaching the same way, e.g., didactic teaching to the class, and not realise the pedagogical potential of smaller classes

The idea that one can find a meaningful numerical class size effect size is therefore mistaken I think – it depends on what teachers and pupils do in classes of different sizes. The general problem with many reviews of class size effects is that as they do not really engage with what goes on in classrooms, which might be related to class size differences, so there is no way of understanding the effects of class size (or lack of them).

To get to another point in your question - the claim that class sizes need to be reduced to a certain size before effects knock in. This is essentially the technical issue of the linearity or non-linearity of the relationship between class size and attainment. Many argue that there is a non-linear cut off or

threshold below which class size begins to matter. This is often seen to be 15 or 20. This is quite a pervasive view and as far as I can tell it stems from two pieces of work.

The first is Glass et al.'s (1978, 1982) early meta-analysis of class size effects. This was influential at the time, both in relation to the study of class size effects and in introducing the use of meta-analysis in educational research. Results showed that effects on attainment increased as class size decreased, and their most powerful claim was that there was a non-linear effect, with the effects optimised at a class size of about 15. However, it was long ago pointed out that the results are difficult to interpret because conclusions will inevitably depend on the quality of the studies included, and some of these are suspect (Slavin 1989).

The second source is probably the most widely quoted single study of class size effects – the Tennessee STAR experimental study (Finn and Achilles, 1999). This was an experimental study which compared classes of average of around 17 vs 23. The interesting point here is that the mid-point between these two sizes is 20! – so there is a suggestion this might be an artefact of the experimental groups chosen.

In our own CSPAR study, rather than pre-select certain class sizes, we adopted a naturalistic design and were therefore able to model statistically the effect of class size and attainment across the whole distributions of class sizes in our large-scale study. Overall, we found little evidence of non-linear effects, i.e., a threshold below or above which the effect altered. It's also worth bearing in mind that if one did find an effect one would still need to account for it, and I can't think of a good psychological or educational reason why there should be some kind of fixed class size threshold effect.

4. ***In your book you talk a lot about class size and classroom processes, rather than just academic achievement. Can you firstly tell us what you mean by classroom processes, and then tell us about why you think we need to be focusing on these areas?***

As I have said, to understand class size effects we need to look closely at what goes on classrooms – at teaching, at classroom management, at peer relations and groups in the class, at marking and other admin teacher activities, at the tasks teachers set, and at effects on teachers themselves. This is what we mean by classroom processes.

As I also said earlier, it's unfortunate that in recent years there has been a lack of attention to what goes on in classrooms There was once a strong tradition of close observation of classroom life some of which we review in the book but now secondary analyses and econometric analysis dominate. These seem more useful for policy because they can arrive at simple numerical scores for an intervention. But in my view neglecting the reality of classrooms is likely to mean results are misleading and hard to interpret – and furthermore it is unlikely to help inform teachers and schools how to deal with different class sizes.

The exploration of class size in relation to classroom processes takes up most of the 'Rethinking Class Size' book, with a chapter devoted to each process.

The main classroom process is teaching. I make an introductory point here. A view that class size is unimportant, or that class sizes could be made bigger, seems to be based on the assumption that teaching is no more than passing on information to pupils. In such a situation, of course, class size is less important. But teaching is much more than just lecturing, as we show in the book.

The key finding was that across the three main forms of data collection, that is, systematic observations, questionnaires and case studies, we found that class size affects the balance of the three main interactive contexts for teaching: individual, groups and whole class.

The clearest result from the observation analysis was that as class size increases, the amount of individual attention and one-to-one interaction between the teacher and the pupil decreases. The converse also applies: as class size decreases, the amount of individual attention increases. An allied finding was that the child's role becomes more passive in larger classes, with a tendency to just listen to the teacher talking to the whole class or another pupil. Conversely, as class size decreases there is more likelihood that the pupil will be more active, initiating and responding to the teacher's talk.

We also learned that teachers perceived teaching to be at its best when they engaged with the individual learner, then using their expertise to choose the tasks and the approaches which would best support the child in making progress. A large class therefore frustrates them, and they feel they are not doing as good a job as they would like.

Class size also affects a second interactive context for learning – groups of pupils within the class. This was seen in terms of how organising pupils into groups becomes problematic as class size increases. A large class meant teachers did not have time to teach small groups, which like individual attention was seen as pedagogically desirable. As group size increases with class size, teaching and classroom management is more difficult.

The third interactive context affected by class size is whole class teaching. Teachers adapt to having more pupils in their class by necessarily engaging in more whole class teaching. None of the teachers in this study thought that whole class teaching was an acceptable alternative to individual support of pupils' learning, and so felt it reduced their effectiveness. While in smaller classes pupils get more individual attention, in larger classes they spend more time listening to the teacher talk to the whole class. They may get more educational input, but this is at the expense of it being largely passive and part of a large group.

We have less data on the quality of teaching in large and small classes in that it relies more on research into teacher experiences through the teacher questionnaire and case studies, and not on direct systematic observations. There were three particular features of teaching, cited by teachers when considering the effect of class size. First, as class size increased more attention was given to discipline, control and classroom management. Teachers described how they were forced into 'crowd control' mode, with adverse consequences on their overall teaching. Second, the amount and quality of 'live' feedback to pupils, that is, immediate feedback on pupils' work is increased in small classes. The benefit of a small class is that it allows teachers to do a better job of monitoring and assessing pupils' work while they are working on it. Third, having fewer children in the class allows the teacher to get to know each pupil more thoroughly. This is likely to mean that teachers build deeper relationships or connections with pupils, which also aids teaching and learning.

There were several other classroom processes examined in the book. Detailed analysis of teacher-completed questionnaires and interviews with teachers and pupils as part of case studies in schools showed the way in which class size affects the teaching and management of classroom groupings. The setting up of within-class groups is a predominant feature of British primary schools, and increases in class size necessarily lead to bigger or more numerous groups, and pressures on space and resources. This sets the context for difficult classroom management and teaching decisions.

The majority of teachers in both the case studies and the Teacher Questionnaires were clear that, other things being equal, relationships between the pupils were likely to be better in a small class and worse in a large class. It was only when addressing the benefits of small classes and the problems of large classes that teachers commented on the *quality* of peer relations, for example in terms of cohesiveness, supportiveness, and tolerance. When teachers in large classes pointed to positives for peer relations it was only with regard to the potentially larger pool of potential social contacts.

While class size may not much affect the curriculum covered, because of constraints set by the National Curriculum and assessment arrangements, it can affect the breadth and the quality of coverage within each curriculum area, in terms of the types of activities the teacher sets up, and the support provided for them. A larger class made it more difficult to provide activities which teachers felt were educationally valuable, including practical work and investigative and sustained activities. It is likely that these kinds of activities will encourage deeper levels of knowledge and conceptualisation. The danger therefore is that as class size increases, the variety and type of educational experiences narrows, leaving the children with a potentially limited range of experiences of the curriculum.

The administrative aspects of teaching can be taken for granted but are often a particular burden for teachers in the UK, with the heavy emphasis on regular assessments and individual reports. We identified three main subcategories: marking/assessment, reports, and planning and preparation. Teachers' accounts showed that these became more demanding for teachers as the numbers of pupils in a class increased. Comments from teachers in interviews and questionnaires also show how these extra demands have a negative impact on their own teaching, well-being and satisfaction with their job.

A final process is differentiation of teaching and pupil tasks, to match the learning needs of individuals in the class. This is perhaps the greatest challenge facing the primary teacher with a large class. We found that differentiation was especially difficult when the class contains a wide range of attainment levels and, following educational policies toward inclusion, which have been a feature of education in the UK in recent years, this includes pupils with SEND. A large class would not be such a problem if children were similar in terms of their attainment, behaviour and motivation.

5. ***I give a session on the role of theory in psychology every year, and how theory helps by providing a framework within which to explain connections among different phenomena and perhaps lead to the discovery of new connections. There seems to be surprisingly few theories to account for class size effects – why is this do you think?***

I guess the most obvious answer here is that there are few theories because a lot of researchers don't feel class size has much effect. Going back to what I was saying earlier, another reason is that explanations of human development and learning tend to be within child concepts like intelligence, motivation, learning styles, effort-based learning etc. and tend not to be interested in the role of contexts in human development.

6. ***In the Rethinking Class Size book you point out that common theoretical approaches to pupil learning tend to concentrate on within child or sociological factors, and that proximal processes are often missing and/or relegated to background variables. Which theoretical frameworks do you think are helpful when conceptualising classroom contextual factors like class size?***

Perhaps I can come back to why I find ecological psychology so interesting. The work of Bronfenbrenner is usually referenced when considering contextual, ecological influences but close reading of his work suggests to me that he does not gets as deep into immediate contexts as the earlier work of Barker.

In the first main book of Barker - *One Boy's Day* - Barker and his colleague Wright (1951) provided detailed written records of the observed activities of an individual child over the course of his day. They found these narrative records were extremely effective as a way of describing multiple attributes of behaviour and the immediate situation in which it occurred. The key insight is that Barker realised that children's behaviour was structured and indeed to a degree predictable if, instead of looking for causes of individual behaviour, he looked at the proximal environmental factors around the behaviour. He realised, in other words, that children's behaviour changed as they moved from one region or setting to another – say from the classroom to the hall, or the corridor to the playground – and that the behaviour of different children within the same setting was more similar than the same pupil in different settings. Barker thought of the discrete, immediate and dynamic units, within which we live our lives, as 'behaviour settings'. Interestingly, one of my MA students (Golding, 2017) recently showed how different school settings, that is, the corridor, the lunchroom and the playground, foster different forces and different behaviours.

Heft gives the example of a primary school language lesson. This involves a group of students and a teacher in a specific location at a particular time with supportive materials (for example, books, chairs) for the express purpose of conducting and participating in the lesson. Although we can't predict exactly how a child will behave in the lesson there are noticeable constraints on what is likely, for example, sitting, reading, listening, writing etc., and not usually running, shouting or tossing a ball. These are typical classroom behaviours we take for granted but they emerge as congruent with the locale where they are observed at a given time.

This idea introduces a powerful way of looking at classrooms and one which we believe is highly relevant to our task of developing a conceptualisation of class size effects. That is, the focus is not just on the behaviour of individuals within the classroom but regards behaviour in classrooms as understandable through a higher order conceptualisation of the interdependencies between factors in the classroom.

We can, I think, take some valuable points from ecological psychology, for example, the importance of the idea of space and context; the identification of a meaningful ecological unit, for example, the behaviour setting; and insights into the effects of what Barker and Gump (1964) called 'underpopulated' settings on behaviour (e.g., as in small vs. large schools). These ideas help with the development of an account of how class size works. Different class sizes may well induce different dynamics, which influence both teachers and pupils, on a moment-by-moment basis.

But to my mind ecological psychology was not developed fully enough to fully comprehend the effects of class size on classroom processes. It helps us conceptualise the context or setting within which action occurs, but needs to be developed in order to capture a full analysis of the kinds of classroom influences and processes affected by class size. We tried to do this in the book with a social pedagogical framework to account for the complex contextual, dynamic and relational factors at work.

7. ***This might be more of a question for a policymaker or politician, but do you think the evidence is strong enough to support policies that focus on reduced class size?***

The simple answer is yes. We are though aware that there are huge funding and priority issues at stake here, with many competing claims on expenditure. In the UK, schools and middle-tier structures like local authorities and academy chains, especially in the recent years of austerity, have been faced with limited funds. Any effort to reduce class size across the board would be very expensive, because it would inevitably mean hiring more teachers.

From a policy point of view, there seem to me to be two priority groups. First, the evidence from our work and others seems clear that it is the youngest pupils in school who would benefit most from smaller classes. Perhaps the oddest thing about class sizes in the UK is the way they tend to be larger at primary than secondary level. We found that low attaining pupils tend - sensibly – to be put into small sets when they get to secondary schools, but why wait until then? – it's too late! A main structural change would be to address this. The clearest implications are for smaller class sizes at lower primary (KS1, 5–7 years).

But there is a second group. We have found that low-attaining children and those with SEND are most likely to struggle in large classes. As class size increases, children in most need experience less overall teaching, more negative controlling comments from the teacher, and less individual attention. Differentiation is vital but difficult with large classes. Teaching pupils with SEND in large classes is a major classroom management challenge. It seems obvious that pupils with ground to make up and learning problems would benefit from smaller groups/classes. And any policy of raising class sizes would be likely to disadvantage the very children who are already struggling.

8. Do you have any top tips for teachers or school leaders? How should they make the most of smaller classes and mitigate problems with larger classes? Do we know enough yet?

In the 'Rethinking Class Size' book we develop a number of recommendations for teachers of small and large classes, based on the idea of realising the pedagogical potential. Perhaps I can offer two here: first, teaching to small groups and, second, collaborative group work in small groups.

We have found that teaching to small groups is not that common, does not seem generally well thought through, and pupils spend little time working together on tasks. For most of the time, the way groups are set up in primary classrooms is little more than a way of managing the seating arrangements.

We suggest more can be done to encourage teaching to small groups, as a way of dealing with large classes. One way that teachers can seek to maximize individualization and differentiation is to avoid the time-consuming attempt to somehow connect with individual pupils, one at a time, and instead organize their teaching to small groups. This could have some of the benefits of interactive whole class teaching but would be potentially more focused and better differentiated in terms of pupil ability. It is in groups, therefore, where one might seek to maximize the effectiveness of instruction.

One of the main issues here is that teaching to groups in Britain is connected to the very common practice of setting up and working with within-class groups organised into homogeneous 'ability' levels. The point of ability grouping is that pupils within each group are closer in levels of knowledge, attainment and skill and this therefore makes it easier for teachers to provide explanations and support. But we have found little evidence of differentiated tasks and teaching for different 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 class sizes. This is a good example of a social pedagogic analysis of interconnected aspects of the classroom

environment – in this case, class size, within-class groups, pupil attainment levels and teaching approaches.

The second way of looking at the social pedagogic potential of small groups is in terms of collaborative approaches, that is, pupils learning together with a deliberate attempt to minimize the teacher's input and encourage pupils to have more control over the learning that takes place. Although pupils are often allocated to small within-class groupings there is little evidence of pupils working collaboratively in these groups (Kutnick and Blatchford, 2014).

Psychological theory shows that collaboration between peers is a powerful force in conceptual development, active learning and communication, and collaborative learning is one of the most effective approaches in the reviews of effective interventions in education (for example, Kutnick and Blatchford, 2014).

Group work may be particularly helpful for teachers with large numbers of pupils, in terms of maximizing their own time with other pupils, while encouraging independence in learning. But without effective strategies to promote successful group work, attempts to implement it often result in frustration among teachers and pupils and the marginalisation of collaborative group work within the curriculum (see Kutnick and Blatchford 2014).

This was the background to the SPRinG project which I co-directed with Peter Kutnick and Maurice Galton. It set out to design, implement and evaluate a new approach to group work in primary and secondary school settings in the UK and was based on the need to develop four key principles: (1) pupils' social and communication skills; (2) teachers' skills to organise the classroom environment for group work; (3) learning activities that warrant group working and enable integration with other instructional approaches; and (4) how teachers can support groups undertaking group work. In my book with Peter Kutnick we describe the work (Kutnick and Blatchford, 2014)

Developing a strategic approach to teaching groups and to collaborative learning in groups is important in its own right, but is also a way in which teachers can help deal with the management problems that can result from large classes.

9. How about academics/researchers – where to next?

What we don't need are any more secondary meta-analyses of the same studies, no matter how sophisticated the statistical analysis or selective the criteria for entry. These tend to get funded because they are relatively cheap to conduct and relatively quick to do. They promise easy solutions, but these are inadequate for reasons I described earlier.

Instead, what we need are new proper *dedicated* studies which pay attention to the limitations of previous studies including the narrow range of 'outcome' measures. It seems to us that what is needed now are high quality quantitative studies which look at class sizes as experienced by teachers and pupils (not numbers on a register at the beginning of the term and still less Pupil Teacher Ratios) in relation to a range of pupil outcomes. But, in addition, they should also factor in measures which capture key classroom processes, suggested by the literature, along with measures which capture the composition of students in the class. This will clearly require sophisticated statistical and multi-method analyses, along with a lot of attention to the design of measures so they are valid and reliable. Above all, these should be studies conducted with an understanding of the educational and pedagogical issues and processes at work in schools.

We also need high-quality 'third-generation' studies, as I have called them (Blatchford, 2012), which look at class size alongside pedagogical changes that will help teachers in large classes and also help teachers make the most of small classes.

Finally, as an alternative to class size changes we can consider the use of extra teachers, and the broader issue of using staff in more flexible ways. There is currently research in Norway which is resourcing and evaluating extra teaching staff (see Solheim and Opheim 2019), and it seems to us that more research like this on flexible ways of using staff would be valuable.

References

Barker, Roger G. 1968. *Ecological Psychology: Concepts and Methods for Studying the Environment of Human Behavior*. Stanford: Stanford University Press.

Barker, Roger G. and Paul V. Gump. 1964. *Big School Small School: High School Size and Student Behavior*. Stanford: Stanford University Press.

Barker, Roger G. and Herbert F. Wright. 1951. *One Boy's Day: A Specimen Record of Behavior*. New York: Harper.

Biddle, Bruce J. and David C. Berliner. 2002a. 'Small Class Size and Its Effects', *Educational Leadership* 59 (5): 12–23.

Blatchford 2012 Blatchford, Peter. 2012. 'Three Generations of Research on Class-Size Effects'. In *APA Educational Psychology Handbook, Volume 2: Individual Differences and Cultural and Contextual Factors*, edited by Karen R. Harris, Steve Graham, Tim Urdan, Sandra Graham, James M. Royer and Moshe Zeidner, 529–54. Washington, DC: American Psychological Association.

Blatchford, Peter, Ed Baines, Christine Rubie-Davies, Paul Bassett and Anne Chowne. 2006. 'The Effect of a New Approach to Group Work on Pupil–Pupil and Teacher–Pupil Interactions', *Journal of Educational Psychology* 98 (4): 750–65. https://doi.org/10.1037/0022-0663.98.4.750.

Blatchford, Peter, Paul Bassett and Penelope Brown. 2005. 'Teachers' and Pupils' Behavior in Large and Small Classes: A Systematic Observation Study of Pupils Aged 10 and 11 Years', *Journal of Educational Psychology* 97 (3): 454–67. https://doi.org/10.1037/0022-0663.97.3.454.

Blatchford, Peter, Paul Bassett and Penelope Brown. 2011. 'Examining the Effect of Class Size on Classroom Engagement and Teacher–Pupil Interaction: Differences in Relation to Pupil Prior Attainment and Primary vs Secondary Schools', *Learning and Instruction* 21 (6): 715–30. https://doi.org/10.1016/j.learninstruc.2011.04.001.

Blatchford, Peter, Paul Bassett, Penelope Brown and Rob Webster. 2009. 'The Effect of Support Staff on Pupil Engagement and Individual Attention', *British Educational Research Journal* 35 (5): 661–86. https://doi.org/10.1080/01411920902878917.

Blatchford, Peter and Rob Webster. 2018. 'Classroom Contexts for Learning at Primary and Secondary School: Class Size, Groupings, Interactions and Special Educational Needs', *British Educational Research Journal* 44 (4): 681–703. https://doi.org/10.1002/berj.3454.

Daniels, H. 2001 *Vygotsky and Pedagogy.* London and New York: Routledge

Ehrenberg, Ronald G., Dominic J. Brewer, Adam Gamoran and J. Douglas Willms. 2001. 'Class Size and Student Achievement', *Psychological Science in the Public Interest* 2 (1): 1–30. https://doi.org/10.1111/1529-1006.003.

Finn, Jeremy D. and Charles M. Achilles. 1999. 'Tennessee's Class Size Study: Findings, Implications, Misconceptions', *Educational Evaluation and Policy Analysis* 21 (2): 97–109. https://doi.org/10.3102/01623737021002097.

Glass, Gene V., Leonard S. Cahen, Mary Lee Smith and Nikola N. Filby. 1982. *School Class Size: Research and Policy*. Beverley Hills, CA: SAGE Publications.

Glass, Gene V. and Mary Lee Smith. 1978. *Meta-Analysis of Research on the Relationship of Class-Size and Achievement*. San Francisco: Far West Laboratory for Educational Research and Development.

Golding, K. 2017. 'Corridors of Power? Behaviour Settings and the Ecological Reality of Pupil Life on the School Corridor'. Master's thesis, University College London.
Filges, Trine, Christoffer Scavenius Sonne-Schmidt and Bjørn Christian Viinholt Nielsen. 2018. 'Small Class Sizes for Improving Student Achievement in Primary and Secondary Schools: A Systematic Review', *Campbell Systematic Reviews* 14, Article 10: 1–107. https://doi.org/10.4073/csr.2018.10.
Hanushek, Eric A. 1999. 'Some Findings from an Independent Investigation of the Tennessee STAR Experiment and from Other Investigations of Class Size Effects', *Educational Evaluation and Policy Analysis* 21 (2): 143–63. https://doi.org/10.3102/01623737021002143.
Hanushek, Eric A. 2011. 'The Economic Value of Higher Teacher Quality', *Economics of Education Review* 30 (3): 466–79. https://doi.org/10.1016/j.econedurev.2010.12.006.
Hattie, John. 2009. *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*. London: Routledge.
Heft, Harry. 2001. *Ecological Psychology in Context: James Gibson, Roger Barker, and the Legacy of William James's Radical Empiricism*. Mahwah, NJ: Lawrence Erlbaum Associates.
Higgins, S., M. Katsipataki, D. Kokotsaki, R. Coleman, L.E. Major and R. Coe. 2013. *The Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit*. London: Education Endowment Foundation. http://dro.dur.ac.uk/11453/.
Krueger, A.B. 2000. 'An Economist's View of Class Size Research', *National Center on Education in the Inner Cities (CEIC) Review* 9 (2): 19–20.
Kutnick, Peter and Peter Blatchford. 2014. *Effective Group Work in Primary School Classrooms: The SPRinG Approach*. Dordrecht: Springer.
Slavin, Robert E. 1989. 'Class Size and Student Achievement: Small Effects of Small Classes', *Educational Psychologist* 24 (1): 99–110. https://doi.org/10.1207/s15326985ep2401_4.
Solheim, Oddny Judith and Vibeke Opheim. 2019. 'Beyond Class Size Reduction: Towards More Flexible Ways of Implementing a Reduced Pupil–Teacher Ratio', *International Journal of Educational Research* 96: 146–53. https://doi.org/10.1016/j.ijer.2018.10.008.
Webb, N.M. and A.S. Palincsar. 1996. 'Group Processes in the Classroom'. In *Handbook of Educational Psychology*, edited by David C. Berliner and Robert C. Calfee, 841–73. New York: Macmillan.
Whitmore Schanzenbach, Diane. 2016. 'Long-Term Impacts of Class Size Reduction'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 59–79. London: Routledge