

RETHINKING CLASS SIZE

The complex story
of impact on teaching
and learning



Peter Blatchford
Anthony Russell

UCLPRESS

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 **UCLPRESS**

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This book is dedicated to Harvey Goldstein, who died of Covid-19 in 2020. He was a brilliant man – a world-leading statistician, the main force behind multilevel modelling, and he was an inspiration and support for the CSPAR study that is at the heart of this book.

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Glossary and abbreviations

Ability	Usually seen as the natural capacity or talent to do something. Used widely in education but often confused with ‘attainment’, which just refers to a person’s level of performance without carrying notions of being innate
Code of Practice	Legal code for the identification and assessment of SEND (in England)
Collaborative group work	A form of peer learning where two or more pupils work together on a task. Similar to ‘cooperative group work’
Core subject	English, maths and science (in English schools)
CSC	Class size conundrum
CSPAR	Class size and pupil–adult ratio research project
CSR	Class size reduction
Differentiation	Provision of different tasks or support matched to pupils’ needs
DISS	Deployment and impact of support staff in schools research project
EHCP	Education and health care plan

EDTA	Effective deployment of teaching assistants research project
EEF	Education Endowment Foundation
ESRC	Education and Social Research Council
IOE	Institute of Education, London (now part of University College London)
IT	Information technology
KS1	Key Stage 1 (between age 5 and 7 years, Years 1 and 2)
KS2	Key Stage 2 (between age 7 and 11 years, Years 3 to 6)
KS3	Key Stage 3 (between age 11 and 14 years, Years 7 to 9)
KS4	Key Stage 4 (between age 14 and 16 years, Years 10 to 11)
LA	Local authority
MAST	Making a Statement research project
Meta-analysis	A statistical analysis summarising other analyses
NC	National Curriculum (for England)
OECD	Organisation for Economic Co-operation and Development
Ofsted	Office for Standards in Education (in England)
PD	Professional development (in-service courses for teachers)
Peers	Children, particularly of the same year group
Peer relations	Children's relationships with one another
PISA	Programme for International Student Assessment database of OECD
PTR	Pupil–teacher ratio
Reception	Class for 4- to 5-year-olds, usually first year of infant/primary schools

SATs	Standard Attainment Tests (in England)
School Action	Pupils requiring provision different from, and additional to, other pupils. Third and lowest level of SEND (see below) in English schools (now discontinued)
School Action Plus	As School Action but also receiving help from sources external to the school. Second level of SEND (see below) in English schools (now discontinued)
SCT	Small class teaching
SENCo	Special educational needs coordinator (post in English schools)
SEND	Special educational needs and disabilities
SENSE	Special Educational Needs in Secondary Education research project
SO	Systematic observation
Social pedagogy	An approach to teaching and learning processes in the context of the classroom
SPRinG	Social Pedagogic Research in Groups research project
Statement	Formal expression of a pupil's SEND status. Pupils with more severe or complex needs that require exceptional provision. This was the highest level of need (now discontinued and replaced by EHCP)
Streaming	Allocation of pupils to classes in all subjects on the basis of attainment (UK)
TA	Teaching assistant
TES	<i>Times Educational Supplement</i>
TLRP	Teaching and Learning Research Programme
TQ	Teacher questionnaire

Tracking	US equivalent of streaming
WPR	‘Wider pedagogical role’ model
Years (UK)	Year 1: 5–6 years; Year 2: 6–7; Year 3: 7–8; Year 4: 8–9; Year 5: 9–10; Year 6: 10–11 Year 7: 11–12 years; Year 8: 12–13; Year 9: 13–14; Year 10: 14–15; Year 11: 15–16

About the authors

Peter Blatchford is Professor in Psychology and Education at the UCL Institute of Education (IOE), where he has spent most of his academic career. Peter's academic roots are in developmental psychology, and throughout his career he has been seeking to better understand the social and developmental processes in classroom settings. Of particular relevance to this book, he directed the large-scale programme of research on the educational effects of class size differences and pupil–adult ratios (CSPAR) based at the IOE. In the course of this longitudinal research, Peter had the privilege to work with a large team – including Penelope Barton, Paul Bassett, Harvey Goldstein, Clare Martin and Tony Russell. Most of these researchers then moved on to the large-scale five-year Deployment and Impact of Support Staff (DISS), which Peter also directed, and which was funded by the English and Welsh governments. Rob Webster joined the DISS research team and then subsequently co-directed with Peter two Nuffield-funded projects on pupils with special educational needs in mainstream schools – the Making a Statement (MAST) and the Special Educational Needs in Secondary Education (SENSE) projects. More recently, Peter returned to the topic of class size and directed a Leverhulme-funded international network on 'Class Size and Effective Teaching'. In addition, Peter co-directed, with Maurice Galton and Peter Kutnick, an ESRC-funded programme of research on collaborative group work (SPRinG) and, with Peter Kutnick, studies of grouping practices in primary and secondary schools, which have also informed this book, in regard to peer relations and group work. This book draws on data from all these projects, and also, just as important, the many hours of discussion and argument about the findings, with the research teams.

Peter is also Honorary Professor at the Education University of Hong Kong and the collaborations there led to the 2016 book *Class Size: Eastern and Western Perspectives* (edited by Blatchford, Chan, Galton, Lai and Lee). He is, at the time of writing, mapping out the idea of a social pedagogy of classroom learning, as part of a three-year Leverhulme-funded Major Research Fellowship.

Anthony Russell worked with Peter on the CSPAR, DISS and effective deployment of teaching assistants (EDTA) projects, all based at the Institute of Education. He worked on the Lamb Inquiry into SEN provision in the UK and contributed to research projects run by the Centre for Inclusive Education at the UCL IOE. He worked as deputy director of the APU science team at King's College London and carried out part of the evaluation of the KS3 science Standard Attainment Tests (SATs), during which time, as visiting senior lecturer at the University of Ljubljana, he ran courses for ministry and academic staff from Slovenia.

In addition, Tony has had a varied career in education, which he brings to this book. In the UK, he taught for 10 years in primary schools, three of them as a primary deputy headteacher. He has worked as a supply teacher in over a dozen schools, as well as being a class teacher in a special school and later two primary schools. He was also the Science Advisor in a London Local Authority for five years, providing support to all 90 schools with the teaching of science, from nursery to age 16. He has also published 48 primary school science textbooks for pupils and teachers for use across the world. On top of this experience Tony has extensive experience overseas working as a teacher trainer and curriculum developer and reformer in Africa (Botswana, Angola and Ghana), the Caribbean, eastern Europe and central Asia. He was employed for three years by the Aga Khan Foundation as a curriculum developer in two centres in Tajikistan.

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We also thank an invited group who attended a two-day workshop at the end of the Leverhulme project, and who contributed much to ways of seeing the effects of class size differences on the ground. We will not list them all by name, but they were a diverse group of academics, head-teachers, staff from policy think tanks, local government, independent schools, governors, journalists, teaching unions, educational NGOs, and parents and post-graduate students.

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Peter Blatchford would like to thank the Leverhulme Trust for a three-year Major Research Fellowship that enabled him to work on the CSPAR data and the idea of a social pedagogy of classroom learning used in this book.

We also thank attendees at a number of presentations on class size, who contributed in various ways to the narrative and conclusions in this book; for example, representatives from the National Association of Primary Education (NAPE), Primary Umbrella Group (PuG), Barking and Dagenham Headteachers, and academics at the University of Stavanger, Norway.

None of those acknowledged should be seen to necessarily agree with the points made in this book. All issues and any errors in the text remain our own.

Introduction

There is an extensive research literature on the topic of class size. This can be gauged by the many reviews on the topic referred to in this book. We have ourselves contributed to this literature. Given this situation, the reader might be forgiven for wondering why we have written a long document on class size. Indeed, an admittedly mischievous colleague recently warned us that ‘no one reads books now’.

There are a number of reasons why we felt compelled to write this book. Perhaps the main reason was that we had something to say about class size which was not present in previous studies, reports and media coverage, and that we had not fully expressed in our own previous writings. There was still a sense of unfinished business, a feeling often provoked when we saw yet another media report on what we often thought were highly dubious claims about class size. Our experience and our research told us a very different story, which we wanted to give a full airing.

As we describe in [Chapter 3](#), it was also our view that although the literature on the topic of class size is extensive, most of the published material takes the form of commentary on, or secondary analysis and reviews of, existing studies. The number of what we call ‘dedicated’ studies is actually quite small. What is more, most of the existing studies have been limited in effect to studying the correlation between class size and academic attainment. There is very little on how class size affects the range of classroom processes, like teaching, grouping practices and peer relations, and how class size is in turn affected by other aspects of the classroom environment, like classroom space, and characteristics of the students in the class. The narrow focus on academic attainment has

got in the way of a full appreciation of the effects of a large class, and an understanding of the potential of small classes.

There has, in other words, been a lot of research and commentary on *whether* there is an association between class size and attainment, but very little attention to *why* there might be an association (or indeed why there may not be a connection – we explain this point later). In contrast, we felt we had a lot to say about a wider perspective on class size effects, and only a book-length document would be able to fully capture what we have learned about the interconnections between class size and classroom processes, classroom features and the characteristics of the pupils.

We state early on in this book that class size *is* important, but that the usual ways of thinking about it miss the way it has an effect. This view is based on our reading of the literature on class size, our extensive research on class size and classroom processes, and our long experience of school teaching (AR) and research (PB and AR) in classrooms. In our view, much of the discussion about class size has taken place in ignorance of the very real effects it has. These effects only become evident when one looks closely at what goes on in classrooms, an approach which has been neglected in an era of big data and econometric approaches. Our work provides a significant counter argument to the views arising from such neglect.

This book offers several new approaches, including

1. the identification of and solution to two ‘class size conundrums’ (CSCs) that underpin the often aggressive arguments about class size: CSC1 – How can we reconcile negative and positive views about class size effects? and CSC2 – Why are the effects of class size not more pronounced?
2. a detailed analysis of a range of data sources from the largest study worldwide on class size effects, including detailed classroom observations, case studies, national questionnaire surveys and interviews
3. an overriding model which shows how class size works through interconnections with other processes and features in the classroom
4. the identification of key pedagogical implications for teachers and schools.

The topic of class size might be considered a relatively ‘niche’ area, and one not of general educational interest. But in order to fully understand class size effects, as we try to do in this book, we necessarily need to connect with a wide range of topics in education. These include methods

of teaching and classroom management, the administrative aspects of teaching, the curriculum and classroom tasks, approaches to grouping pupils, inclusion and inequalities, relationships between teachers and pupils – and between pupils, the provision for pupils with Special educational needs and disabilities (SEND), the deployment of teaching assistants, and well-being and teacher retention. All these topics have importance in relation to class size, and are covered in this book.

The book is intended to be accessible to a wide range of readers, not just academics, and to have international relevance. The authors live and work in the UK and the research on which this book is based is also based in the UK, so the examples and conclusions will inevitably reflect this. However, we are confident that the issues, findings and recommendations described in this book are applicable to many countries. As we shall see shortly, the class size debate is occurring in many countries around the world and the literature on class size effects is now international.

Over the years, we have given many presentations on the topic of class size and been asked a number of intriguing, and on occasion challenging, questions. Sometimes we realised that questions asked had in fact been addressed by our research, but they had not been fully analysed or written up. This book provided the opportunity to fully work through the extensive data collected in our Class Size and Pupil Adult Ratio (CSPAR) study. As we describe in various places in this book, this was a very large-scale project with national questionnaire surveys, detailed case studies and extensive systematic observations, and the data are perhaps the most extensive and rigorous ever collected on the topic of class size. We give references to this work later on. In addition, we were also able to integrate insights from more recent projects such as MAST and SENSE, which we describe more fully in due course (we recommend consulting the Glossary to keep track of the various acronyms). Many of the results found here have never been published before and those that have were in academic journals and not always accessible to a wider readership. Most importantly, this is the first opportunity we have had to integrate the results from separate papers into a coherent and overriding narrative.

We shall see later in this chapter that we have addressed the points that have bothered us about the evidence on class size in terms of four main aims and the two class size conundrums (CSCs). To address these aims and CSCs, in this book we work through a careful conceptual and empirical analysis, which we believe leads us to new and strong insights that help inform practice and policy.

It might also be helpful to say what this book is *not* about. This book is not so concerned with more macro issues such as school structures and management, and school funding and resourcing. What makes this book distinctive is its concern with what goes on in classrooms, and with how extensive and targeted analysis of this in relation to class size helps us better understand the puzzles about effects that have underpinned commentary on class size for decades. Throughout, we attempt to see the class size issue, and the effects of class size, through the eyes of individual teachers and pupils in classrooms, rather than as part of an abstract argument about resources.

The classroom context

In education we are often exercised by big issues. To pick just three: curriculum and assessment arrangements, the benefits or not of ability grouping or selective schools, and whether traditional or more progressive approaches to teaching are best. Rarely, however, do we look analytically at the classroom environment within which children and teachers spend their working days, and which has the most immediate influence on teaching and learning. Even research and commentary on effective teaching and schooling tends to concentrate on what the teacher does, and on school structures and policies, rather than attending to the classroom environment within which the teacher works, and children learn.

We tend to take the classroom environment for granted, no doubt because its familiarity clouds our awareness of its distinctive features. But the classroom is unusual in many ways, with several defining physical features that make it very different to other environments, for example, the home and the workplace. It will typically have a recognisable shape to the layout of desks and tables, sometimes in rows, sometimes put together in groups, and the teacher will often be positioned at the front of the classroom close to a board. There will often, in primary schools at least, be a range of displays around the room, sometimes relatively bare at the start of term, and often by the end of the year a dazzling array of art work, children's written work and resources such as number lines and maps. The nature of the activities and culture will also be distinctive. Walter Doyle (1986) showed how the classroom has a number of distinctive elements, including what he calls 'multidimensionality' (the classroom is often a crowded place, and there is a large quantity of events and tasks in the classroom) and 'simultaneity' (many things

happen at once in classrooms, perhaps especially in primary schools). Christine Howe (2010) pointed out that in classrooms children are usually in ‘performance’ mode – performing for the teacher – rather than in ‘cooperative’ mode – working with each other on tasks. Classroom life is also only possible if everyone, teachers and pupils, follows rules, conventions and sanctions, most of which are quite ritualistic and would seem very odd indeed in any other environment.

One of the most basic and yet peculiar things about the classroom is that it comprises often one teacher – who is in charge – and multiple children – sometimes, as in England, over 30 pupils. This is very different to other environments, for example, and most obviously, to the home environment, where typically there will be far fewer children. This difference in learning environments is important. We argue, consistent with the social pedagogical approach we develop in this book, that teaching and learning do not, as is often assumed, take place in some kind of environmental vacuum, out of context. Instead, both teachers and pupils necessarily have to adapt to the classroom context which they inhabit for much of the school day, and which influences them in subtle but profound ways. As we argue in more detail in [Chapter 2](#), properties and characteristics of the classroom environment, and in particular the number of pupils, exert important but often unrecognised influences on teachers and pupils. We feel that much of the discussion about class size has taken place in ignorance of the very real effects evident only when one looks closely at what goes on in classrooms. It is our view that understanding of these influences on pupils and teachers, and ways in which teachers can adapt to and make the most of the number of children in the class, is woefully underdeveloped – but much needed. The overriding aim of this book is to better understand the educational influence and implications of the size of school classes.

What is class size?

Although this question may appear straightforward, in practice there are a number of complications, one of which being that terms like class size and pupil–teacher ratios (PTRs) have been used interchangeably. PTRs are usually calculated by dividing the full-time equivalent pupils on a school’s roll by the full-time equivalent number of qualified teachers. PTRs are different from class size because they take no account of, for example, non-contact time. It should not be assumed that teachers entered into the calculation are teaching for all the time and that the

pupil element in the PTR is a smaller figure than in the class size figures. PTRs are important for administrative purposes because they are closely related to funds spent per child. Given the huge increase in UK schools in recent years of paraprofessionals such as teaching assistants (we say more about this trend throughout the book), it might seem more realistic to calculate a pupil–adult ratio (where adults would include all classroom-based teaching and non-teaching staff) but this would assume that non-teaching staff were equivalent to teaching staff – an assumption that many would challenge. Although class size figures are probably more helpful as a guide to what pupils experience in schools, figures on PTRs are commonly given, and for some purposes class sizes are not available. Much research, including international comparisons, is often only available in terms of PTRs, and this needs to be remembered when assessing and comparing the results.

Class size might seem to be an obvious and easily available measure, but there are a number of complications. We shall see that the Organisation for Economic Co-operation and Development (OECD), which provides annual statistics on education across the world, calculates class size by dividing the number of children by the number of classes. This is a highly generalised figure and the resulting average is very unlikely to be actually found in any of the classrooms in a school. We have never come across a headteacher who makes decisions about class sizes by using the formula used by the OECD. Class sizes will need to respond to a number of factors including pupil attainment level and age – younger primary children are likely to be organised in smaller classes, for example. On top of this, the number of children actually in the class at any time may be different to the number according to the class register; children may be away or out of the classroom, for example, and the extent of absences may vary from school to school. Moreover, over the course of the school year the number of children may change.

These characteristics of class size and PTR measures are not trivial. Generally speaking, it is preferable for a measure of class size to be closely tied to a child's experience of it, if it is to be precise enough to be examined in relation to educational progress. From a social pedagogical point of view, as developed in this book, the class size experienced by a student on a moment by moment basis is the unit most likely to be connected to pupil learning and teaching. As we shall see, this is the approach that has guided the systematic observation studies we have conducted.

Facts on class size

The OECD regularly publishes figures on class sizes and pupil-teacher ratios (along with a wealth of other useful educational data) in a document called 'Education at a Glance'. As we have seen, class size is calculated by dividing the number of students enrolled by the number of classes. At the time of writing the latest official figures refer to the situation in 2017. The average class size for all OECD countries was 21 pupils for publicly funded primary schools and 22 for lower secondary (figures for upper secondary are more difficult to determine because students often attend several different classes, depending on the subject area). Class sizes vary between countries around the world, as can be seen in [Table 1.1](#), which shows a few selected countries. (Exact data on class sizes in the Education at a Glance documents are not always easy to determine, because they are presented as bar charts. Here we use exact class size data from 2017 taken from *OECD.Stat: OECD 2019*.)

Table 1.1: OECD average class size data (2017).

Country	Primary	Lower secondary
Australia	23.6	22.2
Denmark	21	21.2
Finland	19.6	19.1
France	23.7	25.2
Germany	20.9	23.9
Israel	26.5	28.1
Japan	27.2	32.2
Luxembourg	15.9	19.1
Slovenia	18.4	19.9
Spain	21.9	25.4
Sweden	19.5	21.2
UK	26.7	23.1
USA	20.8	25.7

*Data for all public and private institutions. From OECD Average class size by type of institution for 2017 (OECD 2019).

It can be seen from [Table 1.1](#) that average primary class sizes in 2017 were, for example, Australia 24, Germany 21, Finland 20, France 24, Spain 22, United States 21. The UK had one of the largest average class

sizes at primary level (27), exceeded within OECD countries only by Chile, Japan and Israel (OECD 2019). Class sizes at lower secondary are usually bigger than at primary, for example, the United States has 26, and France 25. The UK is unusual in that average class sizes at lower secondary tend to be lower than primary: 23 versus 27. This trend is also true but to a lesser extent in Australia: 24 primary versus 22 lower secondary.

Though helpful as a general guide, we need to be careful about what we take from these national statistics. They can vary quite a bit between regions of the same country, especially in large countries with very different regions like the United States and China (Lai et al. 2016). Others have pointed out that official statistics on average class sizes, for example as provided by the OECD or the US National Center for Education Statistics, can be misleading because they are based on overall student numbers per teacher rather than class sizes as experienced by teachers and pupils on a day to day basis. This is quite an issue in the United States where class sizes in Nevada, Arizona, Utah, Oregon and Michigan, for example, are estimated to be in reality nearer 30 – far higher than the official and much smaller estimates. (for example, Guerra and Brush 2015).

In the UK there are signs that population increases and demographic changes are leading to a projected increase in primary-aged children in England, and in some areas, given the increased populations, there is a desperate need for school places, which in turn can result in very large primary schools and large class sizes. The UK's *The Independent* reported on a 2017 survey by the Association of Teachers and Lecturers, the results of which indicated that more than half of teachers had seen a significant rise in class sizes as a result, they said, of underfunding (Pells 2017). 'Full Fact', a UK independent fact-checking charity, found that in 2016 around 540,000 primary school pupils in English state-funded schools were in classes with 31 or more pupils, as were about 300,000 secondary school pupils. They point out that this is not new – the numbers of pupils in very large classes have been in the hundreds of thousands ever since 2006. However, the proportion of pupils in classes of 31 or more had risen in primary schools over the past four years, from 11.4 per cent of pupils in 2012 to 12.9 per cent in 2016. Up until 2011 it had been falling, from a peak of 15.2 per cent in 2006. Moreover, 40,000 pupils were in classes of 36 or more in state-funded primary schools in England in 2016, though this represents just 1 per cent of the pupil population (Full Fact 2017).

One contributory complication in the UK is that the current Conservative Government's reluctance to allow Local Authorities (LAs) to plan for school places. Similarly, the government's commitment to so-called 'free schools' (set up by independent groups and funded directly from government) and academy status (also funded directly) make it difficult for LAs to plan for extra numbers. Indeed, perversely, LAs are currently forbidden from building new schools, even when there is a clear need.

We should note here that in some less-developed countries there may be very large class sizes (in Kenya, for example, there are around 80 in a class). There may also be many other fundamental, structural issues (Duflo et al. 2015), which makes policies regarding changes to class size less obviously applicable.

Debate over class size

There has been, over many years, a sustained and often aggressive argument about class size around the world, for example, in the United States, Canada, UK, Holland, France, Australia, New Zealand, Hong Kong and Singapore. Given that class sizes are related to the number of teachers employed and teachers' salaries comprise a major part of education expenditure, one can see that the financial stakes are very high, and understand why the arguments about class size are so heated.

As we shall see, there are quite different views about whether class size is or is not important for teaching and pupil learning. These different points of view can reflect differences in views about what counts as effective teaching, for example, between a traditional, knowledge-based curriculum, taught through whole class methods of teaching, where class size is less important, compared to a more learner-centred, differentiated approach to teaching, where smaller classes are more obviously important. But the debate over class size is also often intensely political, and in most countries there are conflicting positions adopted by different political parties. Competing lobbies often split on party lines, with those on the left usually more pro small classes and those on the right less so.

In the United States there was something of a golden age of interest in class size in the 1980s, with several large-scale and high-profile studies. The most famous study, as we shall see, was the Tennessee STAR project, and this was the inspiration for an interest in the benefits of small classes across the world. There were other US projects; for example, SAGE,

Primetime and California, and for a time there was a lot of attention to the potential value of class size reduction (CSR). Interest in small class sizes has waned a lot in recent years, not the least as a result of the strong pressures on federal and state finances. Searches of recent schedules for the annual meetings of the American Educational Research Association (AERA), which attracts the largest gathering of educational researchers anywhere in the world, shows very few papers on the class size issue. This reveals a lack of interest in, and also funding for, research on the topic. This, though, stands in marked contrast to the views of many teachers in schools, as we discuss below.

In Australia and New Zealand there has been in recent years a big battle over class size. In Australia, class size is one of the most contentious topics in education. There have been strongly worded reports indicating that reducing class sizes does not have an appreciable effect on pupil attainment (for example, Victorian Competition & Efficiency Commission – see report in *Herald Sun*, Hosking 2014), along with influential and sceptical reviews by academics, especially John Hattie (2009), which have in turn been roundly criticised by Australian teacher unions and academics such as Zyngier (2014). In New Zealand, the class size issue has also received a lot of media and political attention, and forceful reaction led to a reversal of a government decision to change pupil–teacher ratios in the compulsory schooling sector.

A similarly heated argument has taken place in Canada, with arguments for and against the benefits of smaller classes. As in other countries, austerity in public finances has put pressure on school class sizes, and teacher unions have been at the forefront of the defence of class size reductions. Several regional governments in Canada have included caps on class sizes in the early grades or fixed pupil–teacher ratios in policies intended to improve school achievement.

In France in recent years there has been a large-scale class size reduction initiative, part of President Macron’s efforts to deal with inequality. Starting in the 2019/20 school year, the idea was to reduce class sizes progressively in more first- and second-year classes (6–7 and 7–8 years old) to affect about 320,000 children, or about 15–20 per cent of pupils of that age. The policy behind the reduction – which involves the hiring of 3,000 to 4,000 teachers – is designed to be a fight against social inequalities, giving pupils from disadvantaged backgrounds ‘a good start’. The policy has not been universally well received and, perhaps unexpectedly, this includes teachers’ trade unions (Melander 2018).

The debate over class size is also heated in Singapore, which has a high average class size among OECD countries. While the Singapore government for more than two decades has held out against any reduction in class sizes, opposition politicians and associations have called for smaller classes, highlighting the benefits to students' academic achievements, the development of soft skills, and reducing parents' dependence on private tuition.

Arguments over class size can be closely connected to political positioning and even election commitments. A good example of this is in Hong Kong where the policy of class size reduction in the earlier grades in primary schools was part of intense political lobbying before the introduction of a small class size policy in 2009/10 (see Lee 2016). One of the authors (PB), who is an Honorary Professor at the Education University of Hong Kong, sat in on an extremely acrimonious debate in the Hong Kong Legislative Council, where positions for and against smaller class sizes were adopted by competing parties in upcoming elections, with attempts to draw in the (reluctant) academics who were present to support competing positions.

In the UK, there have been periodic arguments about class size over many years. In the late 1990s the Labour Government was sufficiently persuaded about the negative effect of large class sizes to introduce a relatively modest cap of 30 in a class for children aged up to 7 years of age. From 1998, all four UK administrations introduced this promise into legislation. One of these – the Scottish Parliament – decided in 2010 to reduce classes to 25 and even suggested going down to 18, although the latter never happened, largely due to the costs involved in providing teachers and buildings.

More recently, in September 2014, there was a lengthy debate in the UK Parliament, with the opposition Labour education spokesperson accusing the Conservative-led Government of presiding over a massive increase in the number of class sizes over 30. This was contrasted with the policy of the previous Labour administration to outlaw class sizes over 30, as we have seen. In her reply, the Education Secretary dismissed claims about rising class sizes as scaremongering and, as is often the way in political arguments, sought to blame the current situation on the failings of the previous (Labour) administration. The debate on class size was long, with the verbatim account in Hansard running to many pages.

A consistent feature of the class size debate across the world has been the wide gap between two marked and opposing points of view.

A positive view on small classes (and a negative view on large classes)

On the one hand, there are those who are convinced that fewer pupils in a class is better for the pupils and for the teacher. As we shall see in this book, teachers are often of the view that larger classes cause them problems that mean it is difficult to teach as well as they would like and that pupils' learning is hindered. Small classes, on the other hand, allow a better context for teaching and meeting pupils' needs.

In the UK, a survey of 4,360 teachers in 2015 conducted for TES Global, the parent company of the *Times Educational Supplement (TES)*, found that class sizes were the single most important factor thought to improve student learning (56 per cent of the sample); more important than better teacher pay (19 per cent), better professional development (11 per cent), more teaching time (8 per cent) and better school leadership (4 per cent) (Wiggins 2016). In 2012, the head of one of the UK's teachers' unions made the point on the BBC Radio 4 *Today* programme that class size matters because every extra pupil adds to the burden of a teacher. A survey of teachers conducted in 2009 by the Association of Teachers and Lecturers (ATL) (see *The Telegraph* 2009) found that almost all felt that there should be a maximum number of pupils in a class, a quarter believed that current pupil to teacher ratios were unacceptable, and the majority felt that large class sizes adversely affected both pupil concentration and participation and teachers' stress levels.

On 28 September 2018, in an unprecedented show of solidarity, hundreds of headteachers from England and Wales attended a rally in central London protesting about the drop in central funding for schools since 2010. The main complaint was the effect funding cuts were having on staffing levels, working conditions and larger class sizes.

In the United States, the near silence from many educational researchers about class size, as described above, stands in marked contrast to the anger from practitioners about large classes. It only requires a quick Internet search to reveal a chorus of anguished complaints from teachers and teacher representatives about large class sizes, which have also found expression in well-attended marches and protests about overcrowding and large class sizes in Arizona, Nevada and Kentucky, as well as Los Angeles and Oakland in California, Denver in Colorado and in Virginia and West Virginia (Sainato 2019). News websites have reported on large class sizes in Arizona and a large protest

march on the Arizona State Capitol in the spring of 2018 (Associated Press and Chuck 2018).

As in other countries around the world, it is clear that teachers in the United States feel their voices are not being heard by policy makers and researchers. There are important consequences, with growing teacher dissatisfaction and evidence that teachers are leaving the profession or moving to private and charter schools where class sizes are much smaller.

Parents in general worry about large class sizes. *The Times* newspaper (27 August 2014) carried a headline “Thousands of pupils crammed into “cattle classes”” and referred to government figures which showed that one in eight primary school children are taught in classes with more than 30 pupils. The piece also refers to a survey of 2,000 parents, some of whom thought too many children were being squeezed into classrooms, with a negative impact on one-to-one attention.

A private education provides a number of likely advantages, including extracurricular activities and entry into valuable social and future employment networks. However, one of the main reasons parents in the UK give for spending money on private education is that class sizes are smaller. The expectation presumably is that small classes allow a better quality of teaching, more individual attention to pupils’ individual characteristics and a higher level of performance.

The Headmasters’ and Headmistresses’ Conference (HMC) – a professional association of headteachers of leading fee-paying schools – makes great play on their website of how HMC independent schools have some of the lowest student–staff ratios in UK schools, with an astonishing one teacher for every nine pupils compared with one teacher for every 22 pupils in the state sector (HMC n.d.). They argue that smaller class sizes are ‘proven’ to improve academic achievement as the ability to spend more time with each child allows teachers to get to know their personal strengths, weaknesses and learning styles, ensuring that their individual needs are met.

There has been a lot of media interest in very large school sizes and large class sizes. An investigation by *BBC News*, in 2017, found that Brighouse High Academy School in West Yorkshire had a Year 9 maths class where one teacher had 46 pupils. Understandably one 13-year-old is reported to have said: ‘It’s difficult to learn because there’s so many people around you, so you’re not focusing as much on the lesson’ (Rhodes 2017).

Some academics and researchers around the world have a positive story to tell about small classes. In the United States there have been

several high-profile research projects, the most well known being the STAR project in Tennessee (Finn and Achilles 1999). This was instigated and funded by local politicians and unions. They employed a commendable randomised experimental design in which children and teachers within schools were allocated to small (average 17) and larger (average 23) classes. We will examine the results in the next chapter, but here we note that one of the principal investigators, Chuck Achilles, went on to champion the view that small classes are so important that they should be the cornerstone of education policy (Achilles 2000). Senior figures in US educational research, like Anderson (2000), Berliner and Glass (2014), Biddle and Berliner (2002a and b) and Brophy (2000), are also clear about the important ways small class sizes can enhance student learning.

Recently, Whitmore Schanzenbach (2016), a US economist, has reviewed the evidence for long-term effects of class size and concludes that the academic literature strongly supports the common-sense view that class size has an important effect on student outcomes. She argues that ‘Money saved today by increasing class size sizes will be offset by social and educational costs in the future’ (76).

As we describe in more detail below, two recent European government-supported programmes of research have been started, seeking to evaluate the effects of class size initiatives. In France, at the time of writing, there is a government-led policy to reduce class sizes in the early grades of school (see Bressoux 2016) and in Norway there has been a recent large-scale, government-backed initiative to increase teacher density in the four youngest grades in school (see Solheim and Opheim 2019). The Norway approach is not the same as a reduction in class size, but it is an allied development, with the presumed benefit of increasing teacher support for pupil learning and achievement.

Some of the most interesting developments in policy and practice with regard to class size have occurred recently in East Asia (see chapters in Blatchford et al. 2016b). It is worth considering these developments in terms of how they contrast with recent government policies in the UK. Conservative-led governments in the UK since 2010 have held to a familiar narrative of the need for educational ‘reforms’ involving a more teacher- and knowledge-based curriculum, and a move from coursework to high stakes and more difficult end of year tests. There has also been a championing of whole class teaching methods, supposedly used in places like Shanghai, because of how well they perform on the OECD’s Programme for International Student Assessment (PISA) international rankings. But paradoxically, in regions

like Shanghai there has been a move toward small class teaching as part of government educational reforms to move from a teacher-dominated to a more learner-centred pedagogy. Interestingly, these developments are in part at least informed by knowledge of Western research such as the STAR project. Governments in a number of countries and regions, for example, in Shanghai, Nanjing, Hong Kong, Taiwan and Macau, are seeking to reduce class sizes, not so much to raise educational standards, as in the West, but because they are no longer satisfied with their school education which is characterised by a teacher-dominated, high stakes examination-oriented culture, with high pressure on students and a lack of creativity and independent learning. It is perhaps telling that, despite the high performance on test scores, PISA results have also shown that Korean students have the lowest expressed interest in mathematics, and Hong Kong students have low interest in reading for enjoyment (Lai et al. 2016).

The approach to small classes in Asia has often been expressed in terms of a distinct approach to teaching, called ‘small class teaching’ (SCT) or ‘small class education’ (SCE), rather than just (or even) a reduction in the number of pupils. In China, this was expressed in the *National Outline for Medium and Long-term Education Reform and Development (2010-2020)*. Shanghai was the pioneer and leader of SCT in China since the late 1990s and its ground-breaking work made a significant impact on SCE/SCT in various regions of China. However, in the past decade, there has been a stagnation in SCE in the city (except for the Yangpu District, see Dong et al. 2016). Instead, several cities/districts in China, including Nanjing, have now taken the lead. In Hong Kong, as a result of mounting political pressure, the government implemented a programme of class size reduction (CSR) in primary schools starting from 2009/10, based on ‘six principles’ developed by the British educational researcher Maurice Galton. In Taiwan, government policy was expressed in terms of the ‘spirit’ of SCT (see Lai et al. 2016; Lee 2016), even when the reductions in class sizes were small. Interestingly, and in contrast to developments in other parts of the world, there has been an emphasis on professional development to support changes to class size and teaching (see chapters in Blatchford et al. 2016b) – an important development and something we return to throughout this book.

A negative view on small classes

But there are powerful voices lined up against smaller classes. [Box 1.1](#) lists some selected quotes.

Box 1.1: Class size is not important

From the United States

In the 2002 book *The Class Size Debate*, Eric Hanushek writes,

‘despite the political popularity of overall class size reduction, the scientific support of such policies is weak to nonexistent’ (Mischel and Rothstein 2002).

Bigger is better. Larger class size means students learn problem-solving skills. They can’t rely on the teacher to ride in on a white horse and save them. Larger class size means students must work together, rely on each other as resources in learning. Larger class size encourages critical thinking. (Murray n.d.)

... teachers’ unions are overwhelmingly leftist organizations, and the mantra of ‘smaller class size’ is just a way for them to push for more members and more political power. But the effect of the push for smaller classes distorts education and causes students to lose the following advantages of large class size:

- better competition with more students
- more ideas and insights to learn from
- better experience at speaking in front of large groups with more students
- less of a problem with cliques, as more students reduce the power of small groups
- better social opportunities, just as bigger parties are generally better
- easier to deal with conflicts, as a loss of six or ten students on a particular day has less impact
- better preparation for the college environment, which tends to have larger class size than high school
- greater efficiency in the use of educational resources freeing resources for other educational activities.

(Conservapedia, 2017)

From the UK

A recent report from the *Times Education Supplement* (Hazell 2018) on the Best in Class summit organised by the Sutton Trust 2018 in New York, summarised the focus of a panel discussion as follows:

Schools should consider increasing class sizes, to free up time and money for teachers to receive proper professional development.

Speaking at the event, Professor Becky Allen, then director of the Centre for Education Improvement Science at the UCL Institute of Education, was reported to have said:

I would go for larger class sizes. I would go for larger class sizes for older children ... I would just have a standard compulsory education for children until they leave school, class sizes of 30 at least.

It was not difficult to find the quotations presented in [Box 1.1](#), and many others like them. A quick online search produces a long list of references to reports and comments that express the view that class size is not important. This gives some measure of the extent to which the prevailing, and highly visible, view is that class size is relatively unimportant.

There is a good deal at stake for politicians and policy makers because teachers usually represent the main element of education funding and even small reductions in class size can be extremely expensive. In the 1980s, in response to lobbying by teacher associations and local authorities to reduce class sizes, Conservative education ministers were keen to say there was no proven link between class size and pupil achievement. Some politicians and policy makers worry that teachers' arguments in favour of small classes are more about making life easier for them and strengthening teacher numbers than raising pupil performance.

Policy makers have some powerful friends in the academic world. Economists such as Eric Hanushek have been widely quoted for their claim that reducing class sizes is not a cost-effective use of public funds and that money would be better spent in other forms of investment, in particular improving teaching quality.

Many academics who are sceptical about or disparage the value of small classes base their view on several well-known meta-analyses, in particular that by John Hattie (2009). The attraction of meta-analyses of this research area is that they combine many studies of class size effects and so seem to offer a definitive basis for the conclusion that class size effects are relatively modest. The Sutton Trust-Education Endowment Foundation Teaching and Learning Tool Kit (Higgins et al. 2013) is another meta-analysis that is also widely cited in the UK, and again reports relatively modest effects of class size on pupil performance. As we shall see in the next chapter, a sceptical view about the benefits of small classes also comes from comparisons of academic performance across many countries, which show that countries and regions with the best performance (like Shanghai) often also have larger class sizes, with

the obvious conclusion drawn that class size is not therefore important. We look in more detail at this type of research evidence in [Chapter 3](#).

Perhaps the most widely quoted recent contribution on class size came from the head of the OECD PISA surveys, Andreas Schleicher, who wrote a piece for the BBC website (Schleicher 2015) in which he described what he saw as seven big myths about top-performing school systems. Myth number four in Schleicher's list is the view that small classes raise standards. He argues that 'everywhere, teachers, parents and policy makers favour small classes as the key to better and more personalised education'. In contrast, he argues that high-performing education systems invest in better teachers and that high-performing countries (many in East Asia) have large classes, so the size of a school class can't be important. He concludes that it is best to put teachers in front of much bigger classes.

The media often carry stories on the topic of class size, and sometimes they express strong views. *The Economist* (2016) advised the then Education Minister Michael Gove to persuade parents that big classes help pupils. 'Super'-sized classes of 70 or so pupils, with flexible staffing, have received interested press coverage (for example, in the *TES* – Bloom 2017).

Some academics have gone even further in disparaging the value of small classes, and even suggest, given their unimportance, that they should be made bigger. The *TES* on 26 April 2018 reported on the contributions by two British academics who spoke at an educational policy summit organised by the Sutton Trust in New York (Hazell 2018, and see [Box 1.1](#)). Both made the familiar point, which we will see often in this book, that there are alternative and more effective ways of spending money; in particular, on professional development for teachers. But they went further. Pointing correctly to how the UK is unusual in having larger classes for younger children in primary schools, and smaller classes for older secondary pupils, they are reported to have concluded that it would be better therefore to deal with this anomaly by increasing class sizes in secondary schools to at least 30 pupils. They argued that schools should prioritise time for teacher professional development over smaller class sizes.

Weighing up the views: Two 'class size conundrums'

Weighing up these views for and against the efficacy of smaller class sizes, it seems to us that far from the benefits of small classes being

a widely held view, as Schleicher argues, the view that class size is unimportant is currently the most dominant view, at least in the West, and is becoming more and more accepted by many involved in educational policy and planning, think tanks and politics. One of the UK participants at the New York meeting just mentioned (Hazell 2018), is reported to have said that arguments in favour of cutting class sizes had ‘petered away’ in England, as teachers have become more knowledgeable about education research.

One reason for the prevalence of the unimportant view is the influence of several high-profile reports, critical of small classes. As well as the view of the OECD (2012), and the influential UK Sutton Trust toolkit, there have been three influential reports: McKinsey and Company (Barber and Mourshed 2007), Grattan Institute (Jensen 2012), and the Brookings Institution (Whitehurst and Chingos 2011), all of which argue that class size is unimportant. One thing that becomes apparent when reading these reports is the way that they draw almost entirely from the same three main sources, which, even at this early point in this book will sound familiar: PISA across-country comparisons of academic attainment, Hanushek’s econometric analyses and John Hattie’s meta-analysis. We examine these sources of evidence in Chapter 3, but here we note that the conclusions of these reports underpin a lot of media coverage and think tank commentaries and blogs, and these have influenced powerful people close to governments. We state early on in this book that we believe that the evidence on which these reports draw is limited and sometimes misleading, and that there are in fact surprisingly few dedicated studies of class sizes. That is, studies specifically designed to address class size through measures designed for the purpose of the research, and with work in classrooms, rather than secondary analyses using data collected by someone else.

It seems to us that the angry debate over class size has become limited, tired and formulaic, and has not been very productive. In order to move things on we believe there are two issues, or what we have come to think of as ‘class size conundrums’ (CSCs), we need to address and solve.

CSC1: How can we reconcile negative and positive views about class size effects?

The deeply entrenched nature of the divide between the two points of view on class size is worrying. We shall see in this book that teachers

are clear that class size matters in terms of teaching, workloads and learning. If the ‘class size is unimportant’ view is correct it would seem to imply that teachers are mistaken. Some educationalists, statisticians and economists seem in effect to imply that teachers and their representatives are essentially out to protect their own interests. How do we account for this wide gulf between the experience of those involved in teaching and much policy-related commentary?

In our view it is possible to explain the discrepancy between the two points of view in terms of a careful look at the evidence on class size effects, and with attention to classroom processes connected to class size difference. We seek to explain what we mean at the end of [Chapter 3](#) and summarise our conclusions in [Chapter 11](#).

CSC2: Why are the effects of class size not more pronounced?

If the effects of class size are so clear to teachers and others, then one is bound to ask, why are the negative effects of large classes and the positive effects of small classes not more obvious in research findings? Is it because there is in fact no effect? Or perhaps there are other explanations, for example, that there is an effect, but research has not done a good job of capturing it.

CSC2 therefore has two expressions:

1. Why don't pupils in larger classes seem to obviously suffer?
2. Why don't pupils in smaller classes more obviously make better progress?

The attempt to answer these two conundrums (see [Box 1.2](#)) is a key task of this book, which we address in [Chapters 4 to 8](#), and summarise in [Chapter 11](#).

Box 1.2: The two ‘class size conundrums’ (CSCs)

CSC1: How can we reconcile negative and positive views about class size effects?

How do we reconcile the deeply entrenched divide between the two points of view – the practitioner view in favour of smaller classes and the policy- and research-based view that class size is at best trivial.

CSC2: Why are the effects of class size not more pronounced? Why don't pupils in larger classes seem to obviously suffer, and why don't pupils in smaller classes more obviously make better progress?

Aims of this book

The attempt to solve the two CSCs is bound up with establishing what we know (and don't know) from research on class size effects. In this book we provide new evidence and a new perspective on class size effects which we feel helps bridge the gap between the two opposing points of view just described. This book has four main aims, described here, and summarised in [Box 1.4](#).

Aim 1: Critically review the connection between class size and academic attainment

In an invited review for the American Psychological Association, one of the authors (Blatchford [2012](#)), divided research on the topic of class size into three 'generations'. We describe each generation briefly in [Box 1.3](#).

Box 1.3: The three generations of research on class size

- The first generation examined effects of class size differences and class size reduction (CSR) on pupil academic outcomes.
- The second generation then progressed to researching relations between class size and classroom processes, for example, teaching and pupil engagement.
- The third generation tests how to make the most – pedagogically – of any reduction in, or changes to, class size. This is important because research has shown that teachers do not always take advantage of the opportunities afforded by small classes.

(after Blatchford [2012](#))

The first generation of research, and by far the most predominant type, has been on the connection between class size and pupil academic pupil attainment. The first aim of this book is to review the evidence on this connection. We do this in [Chapter 3](#). We show that, despite the vociferous views about class size that are often expressed with great certainty, there is in fact little dedicated first-generation research on which to base such views. We show that the focus has been almost exclusively on class size and attainments in first language and mathematics. We look at results from our own large-scale longitudinal CSPAR study, as well as studies that have used other types of research design, but we also conclude that it is difficult to get a full picture of effects because we know very little about the effects on other school subjects and, even more importantly,

very little about the effects of class size on learning as more broadly defined, in terms of facets of children's development such as motivation and independent thinking. We draw on what we think are important results from the systematic observation component of the CSPAR study. We seek to show that potential effects of class size have been missed by much 'first-generation' research, and in addition we also seek to account for CSC1.

Aim 2: Better understand the connection between class size and classroom processes

A key point we make in this book is that getting good evidence on the connection between class size and academic attainment is just the beginning of an attempt to understand class size effects. Indeed, in some important ways, which we hope to illustrate clearly, an exclusive concern with class size and attainment has in fact inhibited an understanding of how class size has an effect.

To understand how class size works we also need to understand how class size is connected with what we call 'classroom processes', by which we mean the key active features of the classroom, including how teachers teach and manage their class; the curriculum activities and tasks they set up; the administrative aspects of teaching, such as assessments, marking, writing reports; and the relationships and interactions between pupils. These processes can be distinguished from other important aspects of classroom life such as the classroom context, in terms of, for example, the size and layout of the classroom, and also characteristics of the pupils within the class.

If the first generation of research can be likened to a black box experimental approach to educational research – in effect a study of the connection between an input (class size) and an output (pupils' academic attainment) – then additional research is needed which opens up the black box and attends to classroom processes, through which we can understand how and why the input is connected to the output – that is, how and why class size has an effect. This is what PB in the article just cited for the APA (Blatchford 2012), called the 'second generation' of research on class size (see [Box 1.3](#)); it is important, because without it there are difficulties in explaining any class size effects on academic outcomes.

Knowledge about such mediating processes might also help explain why previous research has not always found a link between class size differences and outcomes. It may be, for example, that when faced with a large class, teachers alter their style of teaching, perhaps by using

more whole class teaching and concentrating on a narrower range of basic topics. As a result, children's progress in these areas might not be much different to children taught in smaller classes, though there may be negative effects elsewhere, for example, to teachers' morale and well-being, and to pupils' experience of other areas of the curriculum. Another possibility is that some teachers do not alter their teaching to take advantage of smaller classes (Shapson et al. 1980) and it is this that might explain why class size reductions have little effect. In order to examine these possibilities more closely, detailed information on classroom processes is needed. We believe an understanding of classroom processes connected to class size will help solve CSC2, that is, why the effects of small classes and large classes are not more obvious.

There have been a number of reviews of classroom processes related to class size (Blatchford 2012; Biddle and Berliner 2002a and b; Ehrenberg et al. 2001; Finn et al. 2003; Grissmer 1999; Hattie 2005) but knowledge is still relatively limited. Finn and Achilles (1999) concluded: 'Despite dozens of earlier studies, the classroom processes that distinguish small from large classes have proven elusive' (102).

The second aim of this book is therefore to better understand the connection between class size and classroom processes; in particular, teaching, grouping practices, peer relations and tasks and activities. We draw mostly from our own large-scale study of class size and classroom processes at KS2, supplemented by several of our more recent projects, which we describe shortly. This is the basis for [Chapters 3 to 8](#).

We make a more general point here about educational research. We believe this book is timely because much current analysis and commentary on effective teaching and school systems is, in our view, over influenced by econometric approaches and league tables of interventions, and surprisingly vague on the nature of classroom processes that inhibit or facilitate learning. Indeed, our sense is that there has been a surprising and worrying decline of interest in, and research on, the classroom as a learning environment and the interactions that take place there. A complementary aim of this book, therefore, is to help reenergise an interest in the classroom as a context for learning.

Aim 3: Conceptualise how class size works and interconnects with classroom processes

But we also need to go further in understanding classroom processes connected to class size and this leads to the third aim of this book. There has over the years been very little attempt to conceptualise how class

size works and interconnects with other factors. As well as research on particular classroom processes, like teacher–pupil interactions, we also need models and theories to help understand how class size works. If we are right that class size works through interconnections with a number of classroom processes, then what does this interconnectedness look like? Can we devise a visual representation? Are there models that help convey how the effects and interconnections work? And what is the role of other more fixed aspects of the classroom context, such as classroom space, and the composition of the class in terms of pupil attainment levels and behaviour? Building on our own research, in this book we develop a model to capture the way that class size and classroom processes and classroom features work and influence teachers, pupils and learning. In this way we extend the second generation of research, described in [Box 1.3](#).

We have structured the book so that we first present in detail our results on class size and classroom processes before, in [Chapter 10](#), providing an overarching framework to describe the findings. In [Chapter 2](#) we provide the background in the literature to the contextual approach we think is helpful in making sense of class size effects on processes. We could then have presented the final summary framework (found in [Chapter 10](#)) in the next chapter, along with the background, but we thought it best to describe first in detail what emerged from our analysis of class size and teaching, grouping practices and classroom management, peer relations, tasks and curriculum, the administrative side of teaching and the types of pupils in the class, before then summarising the findings and linking them to our contextual approach. This was also the way, chronologically, that the research was conducted, that is, first working through the data on classroom processes, and then through a process of collation, summary and integration developing an overarching framework to describe the findings. This structure also means that the reader is able to have sight of our findings earlier, and in a way first make up their own minds about overall trends.

Social pedagogy

As part of our endeavour to make sense of class size effects we also introduce the notion of ‘social pedagogy’. The idea of a social pedagogy of classroom learning was first used formally by PB and colleagues in 2003 with regard to group work (Blatchford et al. 2003d). It was used to help show how learning in schools is not simply the result of teachers exerting an influence on pupils but 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) to show that these components exist in a dynamic relationship with each other, and effective teaching requires an understanding of their separate and interconnecting influences.

In this book we will further develop a social pedagogy of classroom learning to help understand class size effects. What is intended here goes beyond the role of classroom context in models of teacher effects on learning (for example, Dunkin and Biddle 1974), work on ‘classroom environments’ (for example, Doyle 1986; Moos 1979) and ecological influences on development (Bronfenbrenner 1979; Kounin and Gump 1974), each of which have a more narrow and limited application. It will involve the search for a framework to represent influences and processes identified, as well as how they interconnect.

The third aim of this book is therefore to conceptualise how class size works and interconnects with classroom processes, classroom features and the characteristics of the pupils. This is the aim of Chapter 10.

Aim 4: Draw out the implications for classroom management and teaching

In this book we go one step further, and this leads to the fourth and final aim of the book. As well as understanding the connections between class size and pupil outcomes (Aim 1), the classroom processes connected to class size (Aim 2) and a model of how class size effects work (Aim 3), we also need to develop the pedagogical implications for teachers, that is, guidance on how to make the most of small and large classes (Aim 4).

John Hattie is usually seen as a staunch critic of class size reduction but close reading of his work (for example, Hattie 2016) shows he is aware that, other things being equal, small classes would be preferable but that teachers need to take advantage of small classes. This is one of the central points of this book: if teachers don’t carefully consider their approach with a smaller or larger class then it is no surprise if the effects are modest or not noticeable. Teachers need to adapt their teaching to make the most of small classes, and indeed large classes. We also need to be aware of potential resistances to change; Galton and Pell (2010) have shown how the culture of teaching at primary level can mean teachers are resistant to change.

This understanding of the pedagogical implications of class size differences is what Blatchford (2012) called the ‘third generation’ of research on class size (see Box 1.3) and he argued that this type of

research, though valuable, is very rare. The interest by economists in class size effects is unsurprising given the intimate connection with allocation of resources and the need for informed policy decisions. But econometric studies typically do not engage in pedagogical issues and so have a more limited focus in comparison to educationalists.

A fourth aim of this book, therefore, is to identify the implications for teaching and classroom management. By addressing the pedagogical considerations, we hope to bring the class size debate closer to the reality in schools, and to ways to maximise the opportunities afforded by small classes, as well as deal strategically with larger classes. We summarise the main pedagogical implications at the end of each chapter and devote the last part of [Chapter 10](#) to a summary of our conclusions.

Strong advocates of small classes, like Chuck Achilles, consider that small classes in themselves help teachers and learning. But given evidence that teachers do not always change their teaching in smaller classes, we think we need to go further and develop strategies for them. We do not disagree with the value of examining what we know about effective teaching, but in our view, we can gain additional insights from research on classroom processes connected to class size. Without this it is also difficult to offer practical guidance on how to maximise the opportunities provided by classes of different sizes. Unfortunately, there has been very little attention to, and still less research on, how teachers can make the most of class size.

At the end of each chapter we identify implications for teaching and classroom organisation which we feel can help teachers make the most of the class size. We pull together these suggestions in [Chapter 10](#), and in the last chapter ([Chapter 11](#)) we draw out implications for teaching, practice and policy.

Box 1.4: The four aims of this book

Our four aims are to:

1. critically review this evidence on the connection between class size and academic attainment
2. better understand the connection between class size and classroom processes
3. conceptualise how class size works and interconnects with classroom processes. We do this by developing what we call a social pedagogical approach
4. draw out the implications for pedagogy, that is, what it means for classroom management and teaching.

For whom is this book intended?

During the writing of this book we asked ourselves many times questions about the appropriate style to adopt and questions about our intended readership. We realise that this is a difficult thing to get right, not least because we were keen that the arguments and the results in this book should be accessible to all potential readers, including teachers and school leaders, policy makers and commentators, teacher representatives and parents. At the same time we also wanted to do justice to the data we had collected and to the analysis and argumentation that would be needed to justify any conclusions at which we arrived. We wanted to make the text accessible to all, without overlooking the nuances of argumentation and research evidence.

We have therefore tried to avoid technical (especially statistical) details, while at the same time trying to ensure that the logic of our reasoning and the data we have used is as clear as possible. We felt it was important to describe the rationale behind particular methods of data collection, for example, classroom observations, and the detailed case studies.

As mentioned above, we also very much wanted this book to be of interest and relevance to readers in countries around the world, where the class size issue is as controversial as it is in the UK. It remains our belief that the underlying issues relating to class size are similar across countries, even when features of policy and the school curriculum differ.

This book draws together the two elements of academic and practical experience in education, and it has a particular interest in the views of teaching professionals – especially when they clash with judgements from outside the context of the classroom.

Chapter contents

There are a few books on the topic of class size (for example, Achilles 1999; Annevelink 2004; Cahen et al. 1983; Galton et al. 2015; Glass et al. 1982; Harfitt 2015), as well as two edited books on developments in the United States by Wang and Finn (2000) and Finn and Wang (2002), and an edited book on East and West approaches to class size by Blatchford et al. (2016b). There was also a 2003 book which was on the first part of the CSPAR study, that is, KS1 (children aged 5–7 years) (Blatchford et al. 2003b) but that book draws from a narrower age range, and was at an

earlier stage in our thinking about the topic of class size. We have learned a lot from these texts, and we refer to them in this book, but we also felt that we have something extra to say which is not contained in the previous works, and, moreover, what we had to say could be responsive to the current situation and to the many comments on the topic we have heard in the media and elsewhere.

In [Chapter 2](#) we present two main sections. Although conceptual frameworks and theories are needed to account for how changing class size might influence student outcomes, there have been surprisingly few efforts to provide such theories. Thus, we first extend discussion in [Chapter 1](#) by providing more background to how we have come to think about class size as a classroom contextual influence. This chapter therefore extends the discussion of our aims in [Chapter 1](#), particularly Aim 3, and provides the background to a new conceptualisation of class size effects on classroom processes, which we develop further in the book and then formally describe in [Chapter 10](#). We review general models of classroom influences, followed by theories relevant to understanding class size effects, particularly social psychology and ecological psychology, and then existing models specifically of class size effects.

In the second half of [Chapter 2](#) we also provide more details on the research projects on which the book is based and identify the three main methods of data collection, along with providing an explanation of the mixed method approach we used.

In [Chapter 3](#) we examine the effects on pupils. We show that the effects are multiple, not singular, and that the almost exclusive concern with class size effects on pupil attainment, which has dominated research and policy, risks seriously underplaying and even misunderstanding the effects of class size. We show that results help solve the first ‘class size conundrum’ (CSC1).

A box listing the **Key Themes** discussed in [Chapter 3](#) appears in the conclusion to that chapter, and similar ‘key themes’ boxes appear at the end of [Chapters 4 to 9](#). They are all collated and arranged in [Figure 10.1](#) to provide a visual summary of all the classroom processes identified.

In [Chapter 4](#) we begin our investigation on the effects of class size on classroom processes and start with perhaps the key classroom process: teaching. We closely examine the existing literature on research on class size effects as well as our own research, in particular results from systematic observations. Perhaps the single main result to emerge was the way that class size profoundly affects the frequency and balance of the three main social contexts for learning: that is, the class, the group and the individual. Class size also affects aspects of the quality of

teaching including control/management, live feedback and knowledge of pupils. We also address an important consequence of large class sizes: the cost to teachers themselves. Finally, we address for the first time a key theme of the book: the connection between class size and teaching necessarily involves an analysis of the interconnectedness of a number of factors, rather than thinking in terms of a single line of influence. As in other chapters we also address pedagogical implications of the findings. We also argue that results help solve CSC2.

In [Chapter 5](#) we examine the connection between class size and grouping practices and classroom management. The intense argument over class size has been about associations with pupil academic outcomes but often overlooked is the way class size affects teachers' classroom management of learning in groups. We draw on data on teachers' experiences through annually administered questionnaires at Year 4 (age 8 to 9 years), Year 5 (age 9 to 10) and Year 6 (age 10 to 11) and interviews with teachers as part of detailed case studies. Results show that class size does not directly impact on attainment, but that it 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.

In [Chapter 6](#) we look at class size and peer relations. We show that over and above any connection with class size, our results reveal fascinating insights into the world of peer relationships in classrooms. The assumption that peer relations in school are in a sense peripheral to the main business of learning is mistaken in our view; they are important in underpinning productive classroom relationships and learning. There was evidence of ways in which peer relationships were positive with small classes and negative with large classes, including cohesiveness, supportiveness and tolerance. We also again show the way that class size does not have a direct role in pupil attainments or relationships, but that there is a complex relationship between class size, peer relationships, the history of the relationships between the children, the composition of the class, classroom size, and so on. We draw out pedagogical implications of our results, including the way teachers can help support high-quality collaborative group work.

In [Chapter 7](#) we look at the connections between class size and tasks and curriculum. Our results indicate that while class size may not affect the curriculum covered so much, it will affect the breadth and the quality of coverage within each curriculum area, for example, in terms of the types of activities the teacher sets up and the support for it. We see that a larger class makes it more difficult to set a number of activities

that teachers feel are educationally valuable, including more practical work and more investigative and sustained activities. We also encounter another key theme of the book: differentiation of pupil tasks, to match the learning needs of all the individuals in the class, is perhaps the greatest challenge facing the teacher of a large class. Results concerning class size and the curriculum and tasks also bring out in stark detail the reality of the interconnectedness of classroom factors at work.

In [Chapter 8](#) we examine the relationship between class size and what we have called the administrative side of teaching. There were three main subcategories in this set: marking/assessment, reports, and planning and preparation. We argue that the administrative aspects of teaching can be taken for granted, but for the majority of teachers we have heard from and spoken to it seems very clear that as the numbers of pupils in a class increase the more demanding are the marking, assessments and report writing. The accounts from teachers show how much these extra demands on teachers have a negative impact on their teaching, well-being and satisfaction with their job. As in other chapters, we also see an overlap with other processes at the same time, particularly differentiation and individualisation. Once again, we see how understanding how class size effects work, requires an understanding of the interconnected nature of classroom processes. As in other chapters we also identify pedagogical implications of our results.

[Chapter 9](#) sits apart from [Chapters 4 to 8](#), in that it is not directly about a type of classroom process but more about the connections between class size and the types of pupils. These connections will in turn affect classroom processes like teaching and classroom management. We shall see that differences between pupils, along with class size, are key facets of the classroom context, with consequences for classroom teaching. But we also see that class size effects differ for different kinds of pupils. The combined effect of diversity in class composition, the presence of pupils with special educational needs and disabilities (SEND), and a large class size brings into sharp focus a concept which has emerged before but which is of particular relevance in this chapter: differentiation. The role of teaching assistants (TAs) in relation to class size and pupils with SEND is examined.

In [Chapter 10](#) we pull together all the results from the book. We again show the interconnectedness of classroom processes with class size and present a summary model of effects. We look at the classroom as a system and see the importance, when it comes to class size, of how best to make adaptations to class size differences. We introduce the idea of

realising the social pedagogical potential of interconnections between classroom elements.

In the final chapter, [Chapter 11](#), we summarise our results relating to the four aims of this book, and also summarise how we think we have solved our ‘class size conundrums’ – CSC1 and CSC2. We end with an examination of the implications for practice and policy.

2

Understanding class size effects, and our research approach

In preparation for this and the subsequent chapters we first extend what we said in [Chapter 1](#) about wanting to move debate and research beyond just whether class size affects academic outcomes, toward a richer understanding of the classroom processes that might be at play. In this chapter we provide more background to how we have come to think about class size as a classroom contextual influence. This chapter therefore extends the discussion of our aims in [Chapter 1](#), in particular Aim 3, by providing the background to a new conceptualisation of class size effects on classroom processes. This chapter sets the scene for [Chapters 3 to 9](#), in which we present our findings on class size and classroom processes, to be followed by the presentation of our summary model of findings in [Chapter 10](#).

In the second half of this chapter we provide more details on the research projects on which the book is based and identify the three main methods of data collection, along with an explanation of the mixed method approach we used.

Theories of class size effects

Perhaps the most obvious starting point when considering learning in school-aged students is within child factors such as intelligence, motivation and recent insights from neuroscience and genetics. There is an understandable rationale here in that these factors seem most likely to be the most direct influences on pupil learning. The theories of Piaget,

Vygotsky and Bruner have been influential in understanding learning and cognitive development (see Illeris 2007), and there is now a burgeoning literature on psychological processes connected to learning (see chapters in Harris et al. 2012). Claims for the important role of genetics in human development are becoming ever stronger (for example, Plomin 2018).

An additional and common way of examining factors that influence learning and school performance has been more through a sociological lens, for example, on the influence of the family and demographic factors like social class, ethnicity and mothers' educational level. There has also been extensive interest in school and educational system features that are effective in terms of pupil academic performance, fuelled recently by the PISA results published by the OECD.

Despite the importance of these influences on development, we argue that they are not sufficient to account for learning in classrooms because, first, in the case of individual psychological approaches, the concern with intrinsic within-child characteristics is insufficient to account for classroom learning, and, second, in the case of sociological and school-level analyses, they are too 'distal' from the child's learning. What is needed is a way of capturing the more immediate classroom-based influences on learning, and this includes the number of pupils in the classroom.

Historically, there are a number of models of influences on school progress which recognise some aspects of classroom processes. Dunkin and Biddle's (1974) early model was supported by research in the 'process-product' tradition and had four stages – presage, context, process and product. Class size, in this model, is a context variable, teacher-pupil interactions are a process variable, and the 'product' is pupil attainment. Another model, by Pianta et al. (2002), divides influences on education into 'distal' versus 'proximal' and predictably finds that relatively distal structures like class size have less influence than proximal factors like classroom processes, teaching and the emotional quality of the classroom setting.

One of the limitations of these kinds of models is that classroom contextual features like class size are seen as background, static and relatively distant factors and are given a minor role, if any, as an influence on learning. The results in this book suggest an alternative is to position class size as a factor that might not be as directly important as teaching and other facets of classroom life, but which will interact with and influence them on a moment by moment basis. The important question is not therefore which is important, class size or teaching, but how to

describe the interconnections between them. We need a more dynamic and nuanced approach to classroom contexts and effects on learning.

Another kind of framework for understanding educational influences, which has the virtue of being closer to pupil learning, is the field of teacher effectiveness. As with so-called ‘process–product’ research, quantitative methods have typically been used to identify, usually through correlational analysis, the most important aspects of teaching affecting pupil outcomes (Creemers 1994; Ko et al. 2013; Kyriacou 2009; Muijs and Reynolds 2011). There has also been more recent specifically psychological work, for example on instruction in relation to thinking and reasoning in science (Sinatra and Chinn 2012), instruction for the development of learning strategies (MacArthur 2012), and problem-based learning (Loyens et al. 2012), and approaches to teacher–pupil relationships, informed by work on mother–child relations (for example, the CLASS system of Pianta and colleagues – see Hamre and Pianta 2010). Despite their many strengths, these strands of research also have in common a lack of interest in specific classroom contextual influences on teaching. In some studies, there is coverage of dimensions like supportive classroom environments, but this does not approach the classroom context in the more fundamental way we think is necessary. For the most part there is an underlying assumption in many studies of a direct model, where teaching affects, in a causal way, pupils’ achievements and learning. But, as shown repeatedly in this book, teachers do not meet pupils out of context, and class size can be seen as one contextual influence on classroom life, to which teachers and pupils will inevitably have to adapt, and which will affect their behaviour and the nature of the interactions between them.

We need, therefore, conceptual frameworks and theories that better help us account for class size effects. As Mitchell et al. (1989) have said:

... without an adequate theoretical conception of how changing class size might influence student achievement we are likely to ... draw the wrong conclusions. (37)

Unfortunately, however, there have been surprisingly few efforts made to provide such theories (Grissmer 1999), perhaps in part because disagreement over the effects of class size has inhibited efforts to develop theories to account for them.

Though not directed at class size effects as such, there are insights to be gained from previous models and theories of classrooms more

generally. As we saw in [Chapter 1](#), one approach that nicely captures the dynamic nature of classroom life was put forward by Doyle (1986) and it has been influential in showing there are important elements in place, over and above the characteristics of particular teachers and pupils. He identified distinctive elements of classroom environments, including ‘multidimensionality’ (the classroom is often a crowded place, and there is a large quantity of events and tasks in the classroom); ‘simultaneity’ (many things happen at once in classrooms, perhaps especially in primary schools); and ‘immediacy’ (there is a rapid pace in classroom events). Doyle argues that these dimensions create pressures that shape the task of teaching. Their effect varies no doubt, but the pressures operate in all classrooms regardless of how teachers organise activities. It seems plausible that some of these dimensions will be affected by class size, for instance, a larger class may well mean the first two dimensions, multidimensionality and simultaneity, increase in intensity, but as far as we know this possible direction has not been explored.

Doyle’s work is part of a long tradition of research built on close observations of classroom life. There are a number of other early and still insightful accounts of classroom processes that repay reading (for example, Kounin 1970; Jackson 1968), as well as a rich tradition of more qualitative sociological, ethnographical and linguistic studies of classroom discourse and teacher–pupil interaction (for example, classroom language studies by Barnes and Todd 1981; Cazden 2001; Edwards and Westgate 1994; Mercer 2000; Sinclair and Coulthard 1975; Stubbs 1983; classroom interaction studies by Nuthall 2007; Pollard et al. 1994; ethnographical studies of classrooms by Mehan 1979; Woods 1986). As we have said, in our view it is unfortunate that there seems to have been a reduction in these kinds of descriptive, educational studies of classroom life and processes. But valuable as these descriptive studies are, they do not to date allow us to get very far in understanding the influence of the classroom contextual feature of the number of pupils.

Specific accounts of class size effects

So far, we have looked at more general approaches that might be helpful in conceiving of class size effects. In this section we briefly describe some main models which have been developed specifically to account for class size effects.

Cahen et al. (1983) in their book-length treatment of class size effects uncover many ways in which class size is important in teaching. They do not present a formal model of effects, though they do identify three key summary processes affected by class size: behaviour management, individualisation and effective coverage of the curriculum.

Zahorik et al. (2002, 6) provide a more formal model of class size effects on teaching and learning. Reduced class size means less discipline/more instructional time, more knowledge of students and more teacher enthusiasm. This in turn leads to two lines of causal effects. First, more individualisation (in terms of personalised procedures emphasising articulation and critique of understandings, common content, and one-to-one, small group and class participation) leads to more student self-direction, thinking and responsibility, and this leads to more student achievement. A second, parallel line of influences leads to more hands-on activities, which leads to deeper and more content, which also leads to more student achievement.

Finn, in a number of publications, has also provided models of class size effects (Finn et al. 2003; Finn and Shanahan 2016; Finn 2019). Finn identifies the following factors as influenced by class size: closer relationships, including pupils being more supportive of each other; covering the curriculum in more depth; having more time for instruction in terms of individualised instruction, and assessment of student performance.

Another model of classroom processes affected by class size was put forward by Anderson (2000). He proposed that there are three main ways in which reduced class size has its effect on student achievement: first, there are fewer disciplinary problems and therefore more instructional time and greater opportunity to learn; second, there is greater knowledge of students and therefore more appropriate personalised instruction and greater student engagement in learning; and, third, there is greater teacher satisfaction and enthusiasm and therefore greater teacher effort and more in depth treatment of content.

Anderson conjectured that increased knowledge, greater teacher satisfaction and time, and hard work resulting from smaller classes enables teachers to teach better without necessarily teaching differently (2000, 16). The effect of class size is to change the substance not the form of teaching. From this point of view, smaller classes therefore provide opportunities for teachers to teach better, but they do not cause teachers to do so. As we say in Chapter 3, Anderson suggested his model to be a starting point for a conceptualisation of class size effects.

These specific accounts of class size effects are helpful but in our view are not sufficient, because they are not based on detailed study

of classroom process connected to class size, they have not analysed closely the interconnections between classroom processes and class size, and because they have not formally developed the kind of contextual approach to class size effects we feel is necessary.

In Blatchford et al. (2003b) we developed a model as a way of summarising results from the CSPAR KS1 study. This collated our knowledge at the end of the KS1 phase of the research, when children reached seven years of age, but it now needs to be extended to account for the further work we have done, as described in this book.

Social psychology

Perhaps the most obvious discipline with potential for understanding class size effects is social psychology (Finn et al. 2003). We look briefly at social psychological approaches to group performance and processes in Chapter 5, when examining peer relations and class size. Social psychological theories would suggest (but to date have not shown) a negative effect from larger groups. A decrease in effort stemming from being part of a group has been labelled ‘social loafing’ (Latané et al. 1979), which would be expected to increase with the size of the group or class. An allied concept is that of the ‘free rider’ effect, where group members contribute little or nothing to the group activity and product. A connected theory is a ‘dilution’ effect, that is, increases in the numbers of pupils have necessary effects on the amount of attention a pupil receives from a teacher. Borland et al. (2005) argue that dilution of the teacher’s time across a large number of students lowers the impact of the teacher on any individual student, and so lowers academic achievement. Finn et al. (2003) point to a similar well-known social psychological theory – diffusion of responsibility – which is when people tend to be less likely to help others in distress when part of a group. As group size increases, more diffusion of responsibility takes place. Finn et al. argue that this applies to the classroom, though no research to date has been conducted.

Another social psychological theory, cited by Finn et al. (2003) in relation to class size, is ‘group cohesiveness’ or team spirit. When applied to class size the idea would be that students in small classes are more likely to support each other, while in larger classes groups may divide, hindering teaching and learning. Group cohesiveness is similar to an allied notion of ‘psychological sense of community’ (PSOC), for instance, a perception of similarity and interdependence with others, and feeling part of a larger stable structure. Bateman (2002) argues that PSOC is enhanced in smaller classes.

Although social psychological theories look to have important implications for class size effects it is noticeable that there has been little systematic effort to apply or test these concepts in relation to understanding class size effects in schools. In a small-scale study based on eight teachers' views, Englehart (2006) examined the relevance of several social psychological theories and found some support for social loafing only. Further work would benefit social psychology and education.

But there is also the point, made by Heft (2001), that social psychological or group-based perspectives do not go far enough in helping us understand how the immediate environment affects action and behaviour. This is because we need conceptual frameworks that help identify and explore the particular contexts and settings within which people find themselves and groups develop and operate. Individual and even group-based approaches are insufficient for this task.

Contextual approach

We need then a more thorough analysis of the contextual basis of classroom learning. We have seen that the main traditions of research have tended to consider the effects of teaching and teacher–pupil interactions independently of the environment in which these interactions occur. Some time ago, we made the point that further progress in conceptualising class size effects requires a more fully worked recognition of ‘a contextual approach to learning, within which class size differences have effects on both teachers and pupils’ (Blatchford et al. 2003a, 709–10).

What we can take from social psychological approaches, and Doyle's model, is the basic orientating point that behaviour is affected by the situation as well as by individual characteristics and personalities within the situation. A basic tenet of social psychology (Ross and Nisbett 1991) is that it is easy to underestimate the effect of the situation on behaviour – this is what is called the ‘basic attribution error’.

In terms of a conceptualisation of causal influences, this interest in classroom contextual effects turns on its head the usual way of conceiving classroom effects; that is, in terms of teaching (in research terms, the independent variable) affecting pupil learning or attainment (the dependent or outcome variable). Instead, one can consider interactions and behaviour as dependent variables, with the context or environment of the focus of attention as the independent variable.

One well-known expression of a contextual approach can be found in Bronfenbrenner (1979), although in our view Bronfenbrenner's model

has limited applications for education. We need a conceptual framework that helps us describe and understand classroom contextual factors.

Ecological psychology

One helpful approach, we believe, is ecological psychology, because it helps provide a fuller conceptualisation of classroom influences, including the role of class size. Harry Heft, in a book (2001) and a recent article (2018), argues that ecological psychology is an impressive though sadly neglected programme of research and theory. The general underpinning idea is that settings or regions within which daily life takes place are important and qualitatively distinct, and influence in profound ways the actions of people in the settings. The roots of this approach are explained in Heft's *Ecological Psychology in Context: James Gibson, Roger Barker, and the legacy of William James's Radical Empiricism* (2001). This hardly seems the most instantly accessible book, but Heft nicely shows how ecological psychology has its roots in William James, one of the founding fathers of psychology, though its more recent precursor is in the social psychology of Kurt Lewin. Heft provides a fascinating account of the dual histories of ecological psychology in the works of James Gibson and Roger Barker (a PhD student of Lewin). He outlines how the latter in particular helped show 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 believe that Barker (1968) pointed out something quite profound: psychology is unique among sciences in that it began explicitly as an experimental discipline, and unlike other natural sciences it 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 us the value of descriptive, observational studies of what goes on in naturally occurring contexts within schools (and in everyday life).

In the book *One Boy's Day*, Barker and 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. The basic observation data – 'behavioural streams' – are interesting but perhaps limited in value. It was by examination of the records that they determined more useful

'episodic units'. Barker realised that children's behaviour was structured and indeed to a degree predictable if, instead of looking for causes of 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 that of one of them in different settings. Interestingly, Golding (2017) recently showed how different school settings, that is, the corridor, the lunchroom and the playground, involve different forces and different behaviours. Barker goes on to argue – still provocatively – that:

... we could predict some aspects of children's behaviour more adequately from knowledge of the behaviour characteristics of the drugstores, arithmetic classes and baseball games they inhabited than from knowledge of the behaviour tendencies of particular children. (Barker 1968, 4)

Perhaps Barker's key idea is the identification of a discrete, immediate and dynamic unit, which he called a 'behaviour setting'. This is a region in the community (including schools) which can be characterised as:

... an emergent, dynamic structure constituted by interdependent, joint actions among individuals and features of the material environment (milieu) considered over some extended period of time.

A person who inhabits the setting is a component part, a fixture of the behaviour setting, and as such is:

... anonymous and replaceable, and his behaviour is subject to the non-psychological laws of the superordinate unit. At the same time, however, every inhabitant of a behaviour setting is a unique person subject to the laws of individual psychology, where his own private motives, capacities, and perceptions are the causal variables ... (Barker 1968, 17)

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.

Ecological psychology: Application to education and class size

Barker's work shows us that individual and group approaches to understanding children's behaviour in schools tend to miss the overall reality and influence of the ecological unit within which children spend their time:

For students of education this means that schools must be studied as carefully as the behaviour of the individual children within them. (1968, 15)

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.

Thankfully, Barker and his colleagues Paul Gump and Phil Schoggen did much to apply ecological psychology to schools. The main use of ecological psychology in relation to education is Roger Barker and Paul Gump's book *Big School, Small School: High School Size and Student Behaviour* (1964). From the point of view of our focus on class size, the key idea is that of 'underpopulated' settings. Barker argues that there is an optimal functional level (number of people) in a setting and when the number is reduced below this optimal level there are certain predictable consequences for the people in the setting. The two main consequences are: (1) an increase in the *strength of the forces* acting upon the individual inhabitants; and (2) an increase in the *range of the direction of the forces* acting upon the individual inhabitants (Barker and Gump 1964, 21). The basic idea is that when there are fewer available people, they are pressed more strongly to produce the same number and variety of behaviour units. And fewer behaviour units are pressed to produce the same number and variety of achievements.

We can 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 ‘underpopulated’ settings on behaviour. 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. So class size is more than a static, presage factor, as in Dunkin and Biddle’s model, and is, rather, something that influences teachers and pupils on a moment by moment basis.

There is much to commend the ecological psychology approach, but there are two obvious issues when it comes to understanding class size effects. First, it is interesting that the idea of underpopulated settings is applied to school size when it is perhaps more obviously applicable to the size of the school class, because this is the more direct, proximal context for the child and for teaching. As far as we know, however, there are no studies specifically using ecological psychological ideas in relation to class size. Second, the idea of ‘underpopulated’ is specified in relation to an optimal number, so that anything below that is seen as to a degree dysfunctional – that is, it is largely about how the system adapts when it is abnormally low in numbers. One issue here is the problem of determining an ‘optimal’ number of pupils, and an allied issue is that small classes are regarded by many teachers as anything but dysfunctional! One is also led to wonder about the consequences from an ecological psychology point of view of the most obvious problem for teachers, that is, larger class sizes, or what might in ecological psychology terms be called ‘overpopulated settings’.

Ecological psychology is not therefore developed 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.

Summary

In this early part of the chapter we have tried to provide the basis for rethinking the way that class size has an effect on teachers and pupils. We have moved away from a model in which class size is considered exclusively in terms of associations with academic attainment to one which seeks to map out how class size works as part of a contextual approach. We reviewed some specific class size models. Though helpful, they do not in our view fully capture the factors related to class size

identified in this book, or their interconnections. We paid particular attention to social psychology and ecological psychology for the valuable insights we think it gives to such a contextual approach to classroom learning.

In the following chapters we present our findings on class size and classroom processes, and in [Chapter 10](#) we return to the more general perspective on class size and provide a summary description of our findings. We also there introduce the social pedagogical perspective that we believe is helpful when seeking to understand class size effects.

In the second part of this chapter we explain the research basis for this book.

The IOE research programme and methods of data collection and analysis

What is this book based on? As already mentioned, it is based on our reading of the literature on class size and on our extensive experience of teaching (AR) and research in classrooms (PB and AR). But most importantly this book is based on a pioneering large-scale programme of research extending over many years.

In the interests of narrative and accessibility we do not intend in this book to provide full technical details of the design and forms of data collection and analysis. But we will now describe the key features of our approach in order to allow the reader to appreciate the scale and significance of the methods, understand the basis for our findings and our interpretations, and feel confident in the conclusions we draw (or provide the basis for a critique of them).

Let us describe the projects within the programme.

CSPAR

The main source for this book is the Class Size and Pupil Adult Ratio (CSPAR) project, probably the largest study worldwide of class size and classroom processes and, we believe, unique in terms of the depth, detail, scale and rigour of data collection.

The origins of this project go back to 1996. PB, working with Peter Mortimore, then Director of the IOE; Harvey Goldstein, Professor of Statistics at the IOE; and Clare Martin, the first researcher on the project, put together a consortium of English Local Authorities who were willing to collaborate in a study designed to obtain systematic and objective

information on class sizes in schools and their effects. This willingness was energised by the lack of interest in the issue by the Government of the day. We were aware of previous research on the topic and in particular the Tennessee STAR project and, indeed, organised a seminar in London in order to hear the STAR principal investigators, including Chuck Achilles and Jeremy Finn, speak about the methods and results.

It became clear to us that a new approach to the topic was required. The IOE CSPAR project was set up to answer, for the first time in the UK, questions about two things: the connection between class size and pupil academic outcomes, and the connection between class size and classroom processes like teaching, grouping practices and pupil behaviour. It had a number of features that were designed to build on what we saw as the gaps and limitations of previous research. In line with the limitations concerning experimental designs, which we describe in [Chapter 3](#), an ‘observational’ or ‘naturalistic’ approach was adopted rather than an interventionist one involving random assignment. This also involved a longitudinal design. Baseline assessment and start of school year scores were used in order to adjust for possible purposive or non-random selection of children into classes on the basis of their pre-existing achievement.

The first stage of the study followed a large sample of children from school entry over the first three years of school in English schools (that is age 4–7 years – Reception, followed by KS1 – covering Years 1 and 2). There were 220 schools, with 368 classes and 9,330 children in eight Local Education Authorities (LEAs) involved. Schools were randomly selected from within the participating LEAs, drawn from a wide range of social backgrounds, and were situated in urban, suburban and rural areas. All children entering the first year in selected schools were included in the study.

The CSPAR project then continued over KS2, that is from when the pupils were 7 years through to when they were 11 years. In this stage there were 202 schools and 332 classes in Year 4 (age 8–9 years), which, through attrition, reduced to 173 schools and 261 classes in Year 5 (age 9–10) and 153 schools and 224 classes in Year 6 (age 10–11). (Data collection did not take place when the pupils were in Year 3.) In these schools we followed 8,728 pupils in Year 4, 6,607 in Year 5 and 5,755 in Year 6. This later stage was funded by the UK Government.

As described in more detail in [Chapter 3](#), for the analysis of class size and academic progress we used multilevel statistical procedures to model effects of class size differences on pupil attainment. We controlled

for extraneous, potentially confounding, sources of variation that might affect the relationship, such as gender, child earlier attainment, and family income. In using an ‘observational’ design, we were able to capture the nature of the relationship between class size and achievement across the full range of observed class sizes (not just a restricted range). This enabled us to see whether certain class sizes or bands of class sizes had stronger effects than others. We also employed a more sophisticated approach to modelling the relationship between class size and achievement than that conducted in previous research (see Blatchford, Goldstein et al. 2002).

The CSPAR was therefore what we have called in this book a ‘dedicated’ study of class size effects, in which the team developed new methods able to measure class size and allied classroom factors in a reliable way as well as classroom processes connected to class size. The study developed a range of sources of data. In summary, these were:

- *Data on class size, pupil–adult ratios and presence of teaching assistants (TAs)* from (termly) questionnaires completed by teachers
- *Teacher questionnaires* which asked for information on biographical details and views and experiences on a range of issues
- *Headteacher questionnaires* which asked for information on a number of issues including allocation of teachers to classrooms
- *teaching assistant questionnaires*
- *Assessments of pupils* at the start of the first year of school and at end of each subsequent school year in maths and literacy
- *Pupil background details* including age, gender, free school meal entitlement
- *Class characteristics* including whether the pupils were taught in sets or classes, amount of time teaching, and number and size of within-class groups
- *Case studies* on a sub-sample of small and large classes in Year 5 and Year 6, comprising semi-structured observations and interviews with pupils, teachers and TAs
- *Systematic observations* on a sub-sample of small (under 25) and large (over 30) Year 6 classes in Year 6 (10–11 years).

In this book we concentrate in particular on three forms of data collection designed to provide insights into classroom processes related to class

size: (1) the annual questionnaire surveys of teachers, (2) systematic observations of pupils and (3) detailed case studies. We say more about these shortly.

Publications from the KS1 study have been on relationships between class size and attainment over the Reception year (Blatchford et al. 2002a); class size and within-class groupings (Blatchford et al. 2001); class size and teaching (Blatchford et al. 2002b); class size and pupil attentiveness and peer relations (Blatchford et al. 2003c); as well as a book-length treatment and research article on the whole Reception and KS1 study (Blatchford et al. 2003b; Blatchford et al. 2003a).

There have been fewer publications from the KS2 stage of the research (though see Blatchford et al. 2005; Blatchford et al. 2007). The aim of this book is to give expression to the extensive analysis at KS2 of the three forms of data collection. This book builds on earlier publications, but stands alone, as we shall see, because we present new results from the CSPAR KS2 (7–11 years) stage.

DISS

We also draw on data from another project we conducted – the Deployment and Impact of Support Staff (DISS) study (2003–9) – funded by the English and Welsh governments. This complemented the CSPAR study, and is the largest study worldwide of the deployment and impact of teaching assistants (TAs). It was voted in the top 40 educational research projects in the last 40 years by the British Educational Research Association (BERA).

The key research task in DISS was to establish the causal role of support from TAs in relation to pupils' attainment and other pupil outcomes. A traditional approach would be to use an experimental design, contrasting groups with and without support. But, as with research on class size effects (Goldstein and Blatchford 1998), experimental manipulations can have a narrow range of applicability and do not easily capture the everyday ways that support staff are used and deployed. An alternative naturalistic design was therefore used that sought to measure the amount of support received by pupils under normal circumstances and then examine relationships with academic and behaviour outcomes. It had a similar design to the CSPAR study in that it involved a longitudinal study of pupil progress connected to the amount of TA support for each pupil, controlling for other factors, including pupil characteristics like prior attainment and SEND status that might be expected to affect

the relationship. It was again a multi-method study involving national questionnaire surveys, a systematic observation component and in-depth case studies. Overall, it combined numerical data on connections with pupil and teacher outcomes along with qualitative, interpretive analysis to obtain a detailed and integrated account of the deployment and impact of support staff. There were seven different age groups, across the primary and secondary school stages. ‘Wave 1’ took place in 2005/6 and focused on pupils in 76 schools in Years 1 (age 5–6), 3 (age 7–8), 7 (age 11–12) and 10 (age 14–15), and ‘Wave 2’ took place in 2007/8 and involved an increased sample of pupils in 77 schools in Years 2 (age 6–7), 6 (age 10–11) and 9 (age 13–14). In total there were nearly 5,000 pupils across the seven age groups. Schools were nationally representative.

There are several reasons why the DISS study is relevant to this book. The most obvious reason is that, like the CSPSAR study, the DISS study included a systematic observation component in which observations were carried out over 2005/6 in 49 mainstream schools. The rationale for the coding methods is explained in [Chapters 3 and 4](#). Unlike CSPAR, observations were conducted in all class sizes, rather than preselection of large versus small classes. A measure of class size was included in the observation schedules for each observation point, as we see below, allowing a powerful analysis of the relationship between class size and teacher and pupil behaviour across the full distribution of class sizes. The DISS study also extended the systematic observation component of the CSPAR study because it involved four year groups in primary and secondary schools, Year 1 and Year 3 (5–6 and 7–8 years) and Year 7 and Year 10 (11–12 and 14–15 years).

Further details of the DISS study (especially the systematic observation component) will be presented below and in the following chapters and can also be found in the book by Blatchford et al. (2012) and research articles by Blatchford et al. (2009); Blatchford et al. (2011a); Blatchford et al. (2011b).

A more substantive reason for the relevance of the DISS project is that over recent years a major shift has taken place in the UK, with a recent increase in paraprofessionals working in classrooms, which has relevance for the class size debate. A key use of TAs is to help pupils who are struggling and/or with SEND. Results from the STAR project (Finn and Achilles 1999) suggested that the presence of a TA did nothing to improve attainment in regular class sizes (the key factor was being in a small class). But pupils with SEND in the UK are much more likely to be found in mainstream classrooms nowadays (in contrast to the time

of STAR) and, as we shall see, a key way of meeting this inclusion agenda, especially with large class sizes, has been to hire TAs. Given this, we wanted to examine systematically whether pupil outcomes and classroom processes were affected by TAs. We also examined the effect of the amount of support for individual pupils, rather than just their presence or not in a classroom, as in STAR.

MAST and SENSE

In this book we also draw on results from the Making a Statement (MAST) and Special Education Needs in Secondary Education (SENSE) projects, which tracked the everyday classroom experiences of pupils with SEND in primary schools in Year 5 (9–10 years) and secondary mainstream and special schools in Year 9 (13–14 years), respectively. Both studies were funded by the Nuffield Foundation, and co-directed by Peter Blatchford and Rob Webster. Whereas the DISS study looked at TAs, the MAST and SENSE studies focused on the day to day experiences of pupils most likely to be supported by TAs.

In the first phase (MAST), we collected data on 48 pupils at Year 5 (9–10 years old) who had a Statement for either moderate learning difficulties (MLD) or behaviour, emotional and social difficulties (BESD). In 2014, the SEND Code of Practice was revised. Statements began to be replaced by Education, Health and Care Plans (EHCPs) and the categories of SEND were reorganised. So, for the second phase of data collection (SENSE), in order to offer some consistency between the two cohorts, we prioritised the recruitment of pupils with needs relating to cognition and learning. In the SENSE study, 49 Year 9 pupils (aged 13–14 years) were tracked.

Observations were also collected on comparison pupils. The aim was to observe a sample of typically developing pupils, average in the class in terms of their academic attainment, in order to provide a point of reference for the results on the pupils with Statements/EHCPs. Primary school teachers were asked to identify at least three average-attaining pupils in the class, and one of these pupils was used as the comparator for each lesson observation. Comparison pupils were matched to the pupils with Statements/EHCPs in terms of gender. Observations were collected on 151 control pupils: 115 boys and 36 girls.

In the second phase of data collection in secondary schools, anticipating that many secondary schools set pupils by attainment for core subjects, researchers observed in classes defined as ‘average-attaining’. With guidance from the class teacher, researchers selected

one average-attaining pupil to observe for the duration of the lesson. Comparison pupils were again matched in terms of gender to the pupil with the Statement, who was the primary focus of the school visit. Observations in this phase of the study were collected on 112 average-attaining pupils, again matched by gender: 83 boys and 29 girls.

In the first phase of data collection, researchers visited a total of 45 primary schools across London, the South-East and East of England regions. The majority of schools (84 per cent) were situated in predominantly urban areas. Analyses indicated few differences between the pupil SEND groups, and so results were combined. In the second phase, researchers visited fewer schools overall ($n = 34$), but there was a greater geographical spread. Most of these pupils at Year 9 (82 per cent) had a Statement/EHCP for needs relating to cognition and learning. Both samples were broadly consistent with the national picture for pupils with SEND.

A total sample of just under 100 pupils with SEND may not appear to be a large sample, but each child was treated as a case study comprising week-long systematic observations, along with semi-structured interviews with school special educational needs coordinators (SENCOs), teachers, TAs, each pupil's parents/carers and, in the SENSE study, pupils themselves, as well as documentary evidence. Given the range and intensity of data collected, data collection and analysis were extremely labour intensive. Taken together, the MAST and SENSE studies probably represent the largest systematic observational research project on the everyday behaviour and interactions of pupils with SEND ever conducted in the UK.

Findings from the case studies are presented in Webster and Blatchford (2015, Blatchford and Webster 2018). In this book, we report results from the study's main method of data collection, the systematic observations.

Three types of data collection

Finn et al. (2003) argue that methods for studying classroom processes related to class size have tended to be anecdotal and informal, with few systemic observation studies designed to provide systematic information on classroom behaviour and interactions. The aim of the CSPAR KS2 stage was to build on what we had learned from the KS1 stage and provide systematic information and advance understanding of class size effects. Although, as we have seen, there were a number of different

forms of data collection, in this book we draw on three main sources of data collection, now described in more detail.

1. Teacher questionnaires

A main form of data collection is from practitioners themselves, as expressed in the open-ended responses to the CSPAR annual national questionnaires completed by teachers, headteachers and TAs. In this book we particularly focus on responses to the teacher questionnaire (TQ).

The annual questionnaires from teachers (the TQs) were returned by 486 teachers altogether, 206 in Year 4, 184 in Year 5 and 96 in Year 6. There were also annual questionnaires completed by TAs (340 altogether across the three year groups) and headteachers (437 altogether across the three year groups). In each of these three school years, there were a set of questions which asked teachers to comment on whether, and if so how, the number of children in their class size had affected their teaching, pupil learning and behaviour, grouping practices, pupil relations with other pupils, and classroom tasks and the curriculum. These questions were first trialled and then adapted where necessary where there was ambiguity or uncertainty amongst respondents. In some cases, questions in later years were adapted following answers and feedback from earlier analyses, for example, to split a question into two to get more precise information. In general, however, the aim was to maintain the same questions each year to enable comparisons between, and pooling of, information over time. Other features of the specific questions asked are described in the relevant chapters. Answers to these questions were used as a key source of data for the separate chapters on class size and classroom processes which constitute the core of this book.

For the analysis, all the responses were typed out verbatim and about a 10 per cent sample of teacher responses used to carefully devise a coding frame for application across the three years. All the quotes were sorted into key categories ('codes'), and the reliability of this coding frame was tested by the extent to which separate coders agreed on a subsection of TQ material. Agreement was higher than 80 per cent. These categories referred to the effects of both small and large classes, for example, the effects of class size on the individual attention received by a pupil were often increased in a small class but decreased in a large class.

In the book we make extensive use of verbatim quotes from teachers to support and illuminate the conclusions drawn from the data.

2. Systematic observations

The second form of data collection was from systematic observation studies of classroom interactions and behaviour, in the CSPAR, DISS, MAST and SENSE studies. Systematic observation allows researchers to take representative observations of the classroom at regular intervals. Subsequent statistical analyses conducted on the large datasets provide an objective description of the main features of everyday classroom life, often unavailable to received opinion.

Systematic observation is a technique that is not without its critics (Delamont and Hamilton 1986) or defenders (Croll 1986; McIntyre and Macleod 1986). A main feature of the systematic observation method is the use of a category system determined prior to data collection, with explicit and rigorous definitions, and criteria for classifying behaviour and contexts. The strength of the method is its scale and limited susceptibility to inflection and interpretation by individual observers. It provides a relatively straightforward though labour-intensive means of obtaining descriptive quantitative data; if done well, the category system is reliable, which is usually assessed by the degree to which independent observers code behaviour in the same way. The trade-off, however, is that the pictures of classroom life painted using these data are typically achieved using broad strokes.

In the CSPAR, DISS and MAST/SENSE studies, categories were developed to code pupil behaviour and interactions in classrooms. As we shall see in [Chapters 3 and 4](#), these were typically high frequency and easily recorded behaviours. The category system was based on extensive pilot work to ensure they were suited for the purpose, and accurately described teacher and pupil behaviour – both important indices of ‘validity’, an important facet of research.

More details on the CSPAR coding system are given in [Chapters 3 and 4](#). We adapted a systematic observation schedule that had been developed by PB in previous research (Tizard et al. 1988). This involved a time sampling technique (see Croll 1986) in which 5-minute bursts of observation per pupil were divided into 10-second time units, followed by a short interval for coding. The schedule had categories describing how children behaved in three ‘social modes’: when with their teachers, when with other children, and when not interacting. Subcategories

within each of these three modes covered work, procedural, social and off-task activities.

Systematic observations were conducted during the first year of school (the reception year, 4–5 years old – these results are reported in Blatchford et al. 2003b, and Blatchford, Moriarty et al. 2002b), but in this book we report results from the second round of systematic observations when the pupils were in Year 6 (10–11 years). Classes were selected on a random basis from class size information supplied by the school. It was decided to select schools with classes in two bands: large (31 and over) and small (25 or under). These bands were chosen to be representative of the two ends of the class size distribution, and were slightly different to those used in the reception year (20 or under versus 30 and over), when class sizes are typically smaller. There were 42 classes in all, 16 small and 26 large.

Teachers were asked to select nine pupils, three from each ability range – low, medium and high. Six of these ‘target’ children were then chosen by the researcher, two from each ability band, one girl and one boy. If a child was absent for more than a day they were replaced by a ‘reserve’ drawn from the nine. In some cases there were observations on more than six children (for example, the originally selected child and the reserve). Of the 257 children in all, 128 girls and 129 boys, 83 low ability, 87 medium ability and 87 high ability.

The basic principle was to observe when classroom-based activities could have taken place. Observations were not conducted during parts of the day when all the pupils went out of the classroom. The aim was to observe each child over two days. There were 22,312 observations in total, with an average of 87 observations per child.

In the DISS study, systematic observations were carried out over 2005/6 in 49 mainstream schools. Details of the pupils observed were given above. These schools were chosen at random from a national survey as part of the DISS project and they then agreed to fieldwork by researchers. There were 27 primary schools and 22 secondary schools. Two year groups were generally observed in each school, either Year 1 and Year 3 (5–6 and 7–8 years) or Year 7 and Year 10 (11–12 and 14–15 years). Observations were conducted in 88 year groups.

The observations were on a sub-sample of eight pupils per class. Information on the level of pupils’ special needs status (taken from the forms completed by school staff during observation visits) was used to classify the sample into three groups for the purposes of analysis: (1) no special needs, (2) School Action and (3) School Action Plus/Statement.

The last two categories were combined to help balance numbers of pupils in groups and also because by definition they were the highest level of special need. This classification into three groups was used because of the obvious way in which it affected the amount of support received, as well as its likely effect on learning and attainment. For convenience, the three groups will be called 'no SEN', 'School Action' and 'SEN'. To be representative of the attainment levels of each class, pupils were also classified into three attainment groups – low, medium or high – based on a classification made by the teacher. There were 686 pupils observed in total. There were 67,928 observations (data points) in total, collected over 1,132 hours of observation.

Further details of the two studies can be found in following chapters, and also in Blatchford and Webster (2018).

While the CSPAR study classified class sizes into large and small, a distinctive feature of the DISS study was that for each 10-second time interval the observers noted which of the observation categories occurred, and they also noted the class size at that time. Class size was therefore treated as a continuous rather than a dichotomous variable. Though time consuming to prepare, this allowed a more powerful statistical analysis. Another advantage is that class size is not measured in terms of some general figure on a class register, but rather in terms of the exact number of pupils in the classroom at the time of a given observation. This is much more accurate than the more obvious and easier method of examining associations between an average class size and totals of behaviours across all observations for each pupil.

As with the CSPAR study, observations were conducted on each child in turn in blocks of 10×10-second duration time intervals, with short gaps between observations to allow recording of what took place in the observation 10-second period. Visits lasted between two and four days per school and observations were made in maths, English and science.

The coding system used in DISS is described in [Chapters 3 and 4](#). Each observer was carefully trained in the use of the categories so that observation data is reliable, and this is addressed by the extent to which independent observers are in agreement about the codes for the same behaviour, with a minimum criterion of 80 per cent usually seen as needed. This was achieved in the DISS study; full details can be found in Blatchford et al. (2011b).

The statistical analysis was based on the 10-second observation interval as the unit of analysis. This enabled a powerful and sophisticated analysis of the co-occurrence of behaviours and class size and

allowed us to establish the extent to which a given behaviour occurred in a 10-second time interval with a particular class size. We say more about this in [Chapters 3 and 4](#).

We now turn to the MAST and SENSE studies. Details of pupils observed were given above. The observation categories were similar to those used in CSPAR and DISS, though modified. Details of those used in this book are given in [Chapter 9](#).

Researchers observed for the first 10 seconds of each minute, then for the rest of the minute they coded the interactions, activities and contextual information in operation during those 10 seconds. In primary schools, where pupils with and without SEND tended to be taught in the same class, researchers ensured that every fifth minute of each observation, the focus moved to the comparison pupil. The procedure was similar for the secondary sample, but observations on comparison pupils were made in classes the schools defined as ‘average-attaining’.

Analyses are based on a large dataset, totalling 67,928 observations (data points), collected over 1,132 hours of observation. Researchers collected 57,467 observations (958 hours) of pupils with SEND: 30,782 (513 hours) in primary; 26,685 (445 hours) in secondary. As the main focus of each study was the pupils with Statements/EHCPs, fewer observations were collected on comparison pupils. In total, 10,461 observations (175 hours) were collected on pupils without SEND: 4,233 (71 hours) in primary; 6,228 (104 hours) in secondary.

Inter-rater reliability checks were calculated for the main mutually exclusive categories and showed a consistently high or very high agreement (see Blatchford and Webster [2018](#)).

When totalled across the three studies, that is, CSPAR, DISS and MAST/SENSE, we had over 100,000 separate observation data points in which each had a measure of class size and for pupil behaviour in classrooms. The scale of the data collection makes this unique as a source of information on class size effects; we are not aware of a more substantial observation programme specifically directed at class size.

3. Case studies

The third main method of data collection used in this book stems from the CSPAR project case studies comprising interviews with practitioners (teachers, headteachers and TAs) and pupils, semi-structured observations and documentary evidence.

As we see in more detail in later chapters, case studies were conducted in 10 schools in Year 5 classes (9–10-year-olds) and 10 schools in Year 6 classes (10–11-year-olds). Of the 10 classes, and in order to represent the situation in large and small classes, five small (25 pupils or less, average 20) and five large (31 pupils or more, average 33) classes were chosen at random from the list of classes for those years. Each case study involved semi-structured observations and interviews with 30 pupils, 10 teachers, and 10 TAs each year, overall. Nine pupils were selected by the teacher in each class, three above average, three average and three below average in attainment levels, and then one child from each group was observed and interviewed by the researchers.

The aim of the case studies was to provide a complementary and detailed portrayal of individual classes, which would provide the basis for a more interpretive and grounded analysis of factors relating to class size differences. Selected aspects of classroom learning and experience, expected on the basis of findings from other methods of data collection to be connected to class size differences, were defined in advance, and were then refined on the basis of pilot field visits into headings (which included grouping practices, tasks and curriculum, and teacher–pupil interactions), which structured data collection. In this way whole class and selected child observations in terms of event sampling of significant events; semi-structured interviews with teachers, teaching assistants and pupils; end of session/day comments and judgements by the field worker, were all organised in terms of the main headings. Case studies were led by AR and conducted by members of the research team who were also experienced teachers as well as field workers. Quite deliberately, the aim was to marry aspects of systematic observation (which emphasises the objectivity of data), with professional and interpretive judgements by experienced teachers.

Further features of the methods used

A multimethod study

The approach adopted by the study and this book is therefore multimethod. This kind of approach has become commonplace these days in educational research, but one needs to be careful (Symonds and Gorard 2010). In general terms, we have sought to strive for ‘methodological integrity’ in mixed method research as set out in a recent paper for the American Psychological Society Publications and Communications

Board Task Force (Levitt et al. 2018). They argue that qualitative and mixed method research should be judged in terms of, for example, the selection of procedures that usefully answer their research questions and address their aims and considering findings in their context – for instance, their location, time and cultural situation.

The fact that more than one method is used does not of course guarantee any special advantage to a study. Although it is sometimes assumed that a combination of methods makes up for limitations in individual methods of data collection, we think this is misguided. Combining methods successfully depends fundamentally on the strength of the individual methods of data collection and how well they are used together.

As we say in the course of the book it was not possible to use data from all three forms of data collection for all classroom processes. This is because we did not have, for example, systematic observation data to complement results from the TQs or the case studies. In [Chapters 6 to 8](#) we have relied primarily on evidence from the TQs and the case studies. The findings and conclusions for these chapters are therefore more limited and will need to be treated more cautiously as a result.

In this book we have for the most part first presented results from each method of data collection separately. For example, in [Chapter 4](#), where we could draw on all three forms of data, we present results on class size and teaching in the sequence: teacher questionnaire (TQ), systematic observation and case studies. But the three methods of data collection were also deliberately designed to mutually inform each other and be conceptually integrated. One way this integration works is in terms of the categories stemming from results from one method of data collection being used to extend and inform the methods and themes used to analyse another method of data collection. An example of this, as we have seen, is the way the structuring themes in the CSPAR KS2 case studies were informed by emerging results from the TQ and systematic observations. The long-term nature of the study also meant that key structuring categories for the interviews and semi-structured observations in the KS2 case studies were constructed around results from the earlier results from the study.

The long-term nature of the research also helped the development and piloting of methods of data collection. Methods of data collection first developed in the KS1 stage were extensively used and evaluated and were revised where appropriate. It was also possible to adapt methods in the light of emerging results. Another connected feature was

the presentation of early results to teachers and our advisory groups. We were able to discuss provisional findings with them and together work through some possible explanations and possible changes to data collection techniques, and identify additional information needed in future data collection.

The integration of the three methods of data collection is most obviously seen in the way that overarching themes are developed from careful cross examination of each method of data collection. To give an example, in [Chapter 4](#) a section of results from the TQs was mutually informed by results from the systematic observations to show how, from different points of view, class size had important consequences for the balance between three interactive contexts for teaching – individual, group and whole class. We shall see how the TQ results were then analysed to extend these results with a broader and more qualitative analysis of ways teaching was affected by class size. This, in turn, was further supplemented by results from the case studies of large and small classes in schools. This shows the progressive and iterative approach that was used to ensure that the full analysis made a whole that was more complete than the sum of its parts.

Another feature of the method of data collection has been the way we deliberately collected data on the practitioner experience. The teacher-completed questionnaires and interviews with teachers conducted as part of case studies in schools provide a valuable insider view on classroom life. We argue that these are valuable in their own right. It is important, we believe, to systematically address practitioner experiences, because they have privileged access to their own teaching and classroom management, and that of colleagues. This enables them to draw on moment by moment experiences of the role of class size, as well as reflections over a block of time. We also recognise, however, that there can be issues of validity and reliability connected to the use of teachers' perspectives and reported experiences, and that ideally these need to be combined with other forms of data collection. One of the strengths of the multimethod approach used in this book is that findings and themes can be cross checked against each form of data collection. It is important to cross check and, if necessary, seek to reconcile practitioner experience and results from the systematic observations. This is not least because of findings from, for example, Shapson et al. (1980) who showed that the teachers' views about the effects of class size were not always supported by the results from their systematic observation analysis.

Interpretation of findings

The interpretation of the data is no less important than the methods of data collection. A strength of this study, we believe, is that the care that went into collecting and analysing data is matched by that taken in its interpretation. The long-term nature of the research has again helped. There have been a number of peer reviewed articles stemming from the KS1 stage of the research, as we have seen, which provided feedback and comments. This, in turn, helped provide the basis for the conceptual and empirical work over the later KS2 stage, described in this book. Moreover, in regular meetings of the large team on the project we carefully examined findings over time to ensure that the emerging conclusions were fully grounded, tested and coherent. There were also many presentations of results to various audiences, both academic and practitioner, and much was learned about the strengths and weaknesses of our interpretations and suggestions, along with possible alternative or additional ways of thinking about them. It is this interpretation that we present in [Chapter 10](#).

Leverhulme International Network

The research programme was further supplemented by a Leverhulme-funded ‘Class Size and Effective Teaching’ International Network, led by Peter Blatchford (2015–18). This involved a group of ‘network partners’ and stemmed from a belief that such an international network would help advance understanding of educational effects of class size and how teachers can make the most of smaller (and larger) classes. It brought together prominent researchers from universities in the UK, mainland Europe, East Asia and the United States, representing countries of strategic importance in this field. It also addressed the neglected topic of effective pedagogies in different sizes of class, something which has helped inform the discussion in this book. All those involved in the network contributed to a recent edited book *Class Size: Eastern and Western Perspectives* (Blatchford et al. 2016b) and a Special Edition of the *International Journal of Educational Research* (Blatchford and Russell 2019). The project involved three workshops and the final one of these – in London in 2016 – was extended to include local authority officials, headteachers, teachers, teacher union representatives and academics. There were a number of roundtable discussions, the conclusions of which were written up and have also helped inform this book.

As described above, in the following chapters we present our findings on class size and classroom processes. In [Chapter 10](#), we return to the more general perspective on class size and provide a summary description of our findings.

First, in the next chapter, we will look more closely at the evidence on class size effects on pupil outcomes.

3

Class size and pupil outcomes

Introduction

We have argued that research and commentary on class sizes in schools has focused almost exclusively on the association between class size on the one hand and some measure of pupil academic attainment on the other. We argue that there are serious limitations with the usual evidence used to address this association. Moreover, the exclusive focus on class size and academic outcomes has meant that other aspects of pupil development and functioning have been neglected, as have classroom processes like classroom management, teacher–pupil interactions and peer relationships. We address classroom processes in later chapters. Here, we focus on the connection between class size and pupil ‘outcomes’, defined quite broadly, so that we include other aspects apart from academic attainment.

We first critically examine the main sources of research on class size and academic attainment, including our own CSPAR study results, and then present our findings on class size and pupil engagement in class. We also identify other aspects of pupils’ development which are likely to be importantly affected by class size, but about which we have very little research evidence.

We will seek to justify our view that there are problems with both the existing evidence for an effect of class size on pupil outcomes and the commonly voiced conclusions about the evidence. We also use the review below to make a number of points that provide the groundwork for other chapters in this book, as well as offer a solution to our first class size conundrum, CSC1 (that is, how to reconcile the deeply entrenched divide between those in favour of smaller classes and those that view class size as at best trivial).

Research on class size and pupil attainment

The main direction of research on class size, that is, on associations between class size and academic outcomes, has been called, as we saw in the last chapter, the ‘first generation’ of research on class size (Blatchford 2012). There have been a number of older reviews in the United States, for example, by Cooper (1989), Glass and Smith (1978), Glass et al. (1982), Robinson (1990), Robinson and Wittebols (1986) and Slavin (1989), and early reviews of British research in Blatchford and Mortimore (1994), Burstall (1979) and Dewhurst (1993). More recent reviews of the class size literature include: Blatchford (2012), Biddle and Berliner (2002a and b), Blatchford et al. (1998), Day et al. (1996), Ehrenberg et al. (2001), Finn et al. (2003), Galton (1998), Grissmer (1999), Hattie (2005) and Wilson (2006). Reviews and commentaries vary in their conclusions, with some very positive about the benefits of smaller class sizes (for example, Achilles 1999; Biddle and Berliner 2002; Finn et al. 2003), some relatively lukewarm (for example, Ehrenberg et al. 2001), and some openly negative (for example, Hanushek 1999; Slavin 1989).

In this section, research is reviewed in terms of the different research approaches that have been used: correlational, meta-analysis, experimental, longitudinal and natural design studies. Whilst we do not intend to provide an exhaustive review of research (see reviews above) we need to explain the rationale for what we see as some common but questionable conclusions about the research evidence, and identify where we see the research evidence is limited.

Correlational/cross-sectional designs: Is class size associated with pupil attainment?

The most obvious way of investigating the effect of class size on pupil attainment is to examine the association between class size on the one hand and some measure of pupil academic performance on the other. This was the approach adopted by early large-scale correlational studies in the UK (Davie et al. 1972; Little et al. 1973; Morris 1959; Wiseman 1967). These studies, surprisingly, tended to find that pupils in larger classes did better than pupils in smaller classes. The results from these studies are hard to interpret because the well-known problem with this kind of correlational research, which looks at naturally occurring associations between size of class or pupil–teacher ratios (PTRs) and pupils’ performance, is that we often do not know whether the relationship

between the ‘independent variable’ (in this case class size) and the ‘outcome’ (pupil achievement) can be explained by another, confounding factor. To give the three most obvious, the results could be explained by relatively poor-attaining pupils tending to be in smaller classes; by teachers being forced to change their style of teaching in larger classes; or by experienced (and possibly better) teachers being assigned to larger classes.

Cross country comparisons

Another way of assessing the connection between class size and pupil performance is to compare the educational performances of countries with different class sizes. This has been a common approach in recent years and one of the most influential has come from the PISA surveys on pupil performance across different countries (for example, PISA in Focus 13 OECD 2012). These comparisons tend to find that countries and regions performing at the higher end of the attainment chart, like Hong Kong and Shanghai, have relatively large classes and it is therefore concluded that class size cannot be important (OECD 2012). What is more, these countries and regions with larger classes are also higher in some other characteristics – for example, teacher salaries – and it is therefore also argued that these characteristics are more important. A while ago there was media coverage of another study, conducted by an economist and the education firm GEMS Education Solutions (Dolton et al. 2014), which ranked countries in terms of their efficiency in educational spending. South Korea is highlighted for being one of the world’s highest performers in school tests but also has relatively big class sizes.

On the basis of this kind of evidence, the point is often made that there is no clear link between smaller classes and better results, and even, perversely, that large classes are better. These findings have led a number of people, including the OECD’s Andreas Schleicher, as we saw in the first chapter, to argue that class size cannot be important.

Although at first sight convincing, there is a logical and methodological weakness to this kind of global international comparison. The basic problem is the simple one of misinterpreting correlation (that is, that two things tend to go together or be related) with causality (that is, that one thing causes the other to change). The fact that some countries have large classes and also do well on international tests might not be a sign of a causal link between the two but could instead be attributable to a host of other cultural, educational and economic differences. High

parental expectations and very high levels of out-of-school tutoring or 'shadow education' (Bray 1999) are prominent not only in Hong Kong, but also in Korea and indeed much of East Asia.

Meta-analyses and other reviews: Putting all the studies together

Perhaps the main source of evidence on class size effects on pupil outcomes has come from reviews of the existing literature. There have been several different types of reviews: general narrative (for example, Biddle and Berliner 2002), meta-analyses (for example, Glass and Smith 1978; Glass et al. 1982), and 'best evidence' (for example, Slavin 1989).

Glass et al.'s (1978, 1982) early meta-analysis 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. It involved taking the results from 77 studies and calculating overall effects based on a common metric for each study. 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 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).

Other analyses have been conducted by economists. Perhaps the most widely cited is by Hanushek (1999, 2011) who has consistently argued that his results show that class size is not important and money should be invested elsewhere. The McKinsey report, mentioned in the last chapter, bases its conclusions about the unimportance of class size almost entirely on one article by Hanushek. In other reports and commentaries, the claim that class size is unimportant is often backed up by a reference to Hanushek's work, which has developed a credence based on the regularity with which it is cited (a common problem, exacerbated by the way many searches are now done online). This is important because if there are doubts about the basic research work, then there are doubts about the claims based on it. Another review by the Educational Research Service (Robinson 1990; Robinson and Wittebols 1986) was critical of Glass et al.'s findings, but also cautious about the benefits of small classes. They argue that within the range of 25–34 pupils, class size makes very little difference in most subjects above the primary stage. Other reviews conclude that class reductions are less effective than other and less costly alternative initiatives (Slavin 1989; Department for Education (DfE) 2011; Yeh 2009).

There have been a number of strong technical critiques of Hanushek's research, for example, by Ehrenberg et al. (2001), Biddle and Berliner (2002), Krueger (2000) and Whitmore Schanzenbach (2016), who argue that it seriously underestimates effects of class size. As we saw in the first chapter, many cross country comparisons and much econometric work don't study class size at all – they rely on analysis of ratios of pupils to teachers (see Chapter 1 for an account of the difference between class size and pupil–teacher ratios). Biddle and Berliner (2002) also point to questionable design features of some econometric analyses, as well as a concern that Hanushek in particular is deeply associated with radical free market conservative policies in the United States and that this needs to be taken into account when considering his approach to the funding of public services.

But a main separate problem with these kinds of econometric perspectives, and indeed many reviews of class size effects, is this: although they make strong claims about class size effects, they do not really engage at all with what goes on in classrooms, which might be related to class size differences, and so there is no way of understanding the effects of class size (or lack of them).

The most famous meta-analysis in education is probably John Hattie's (2009) book *Visible Learning*. The analysis is an extraordinary achievement. Hattie took the findings from over 800 meta-analyses reporting on over 50,000 studies involving millions of subjects, and then combined them by using the common metric of an 'effect size'. This approach has been called a meta-meta-analysis, or a mega-analysis. The effect sizes are averaged to provide a typical figure for the particular intervention. An effect size of .4 is the average, and is taken to be the level at which an intervention is worthwhile. Hattie's work has been the single most influential source of the view that class size reductions are less effective than other and less costly alternative reforms. In the UK, the Sutton Trust Toolkit-Education Endowment Foundation Teaching & Learning Toolkit (Higgins et al. 2013), a meta-analysis, has been influential and widely used, and practitioners have been advised to consult it to determine the most successful interventions to use in their schools, based on the strength of the average effect size for that intervention. There is a similar conclusion about the modest effect of class size relative to other interventions.

There have been several critiques of the meta-analytical approach (Higgins and Simpson 2011; Simpson 2018; Terhart 2011; Wrigley 2018), particularly with regard to the difficulties of interpretation when many different studies of varying degrees of quality are included.

A new meta-analysis of class size effects for the Campbell Collaboration (Filges et al. 2018) found at best a small effect for reading and some signs of a negative effect for maths, leading them to feel they could not rule out the possibility that small classes may actually be a bad influence on some children. In our view this report does not really advance knowledge. It deals with many of the studies already included in previous meta-analyses but employs stricter but rather unclear rules about what studies to include (it excludes the often-cited natural experiments of Angrist and Levy and the CSPAR longitudinal correlational study, for instance). It also does not consider classroom processes, so is not able to explain their results.

A general problem with the logic behind the conclusions from these meta-analyses of class size effects, it seems to us, is that it is not really a fair test. Educational initiatives, with which class size reduction (CSR) is compared in the meta-analysis – 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. This should also be remembered by those who support the importance of class size but then feel it is enough to alter the number of pupils in a class without also changing their teaching approaches.

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

The issue of how to make the most of small (or large classes) is a major theme of this book.

Dedicated studies of class size

One of the most interesting but troubling things to emerge so far from this brief review of research on class size is that most studies are not what we have called ‘dedicated’ research on class size effects, that is, studies which collect data specifically on class size and pupil attainment, with

methods and measures designed specifically for the research. Instead, they are usually secondary analyses of data collected by someone else. This is true of correlational, cross country, meta analyses and econometric research. This is not to say that this kind of approach is not valuable, but it does seem strange to us, especially given the high profile and importance of good evidence on the class size topic, that there has been so little specially designed research on it.

So let us now look at dedicated research – there are two main types: experimental and naturalistic longitudinal.

Experimental studies

The main difficulty with correlational research is that it cannot overcome the problem that an extraneous factor might explain the correlation, or lack of it, between class size and attainment. To overcome this problem, it is often argued that educational research should model the approaches of the natural and medical sciences and use experimental designs in which pupils and teachers are randomly assigned to classes of different sizes. If this allocation is done properly, then any relationship between class size and later differences in pupils' academic performance in classes of a different size must be attributable to class size and not to any other factor. (This is because the random allocation means no extraneous variable can systematically affect either class size or attainment.) This kind of research design is not common in educational research on class size, because of ethical problems (try explaining to some parents that their child will this year be in a larger class than other children) and practical and financial problems (smaller classes are likely to mean hiring more teachers and creating or building more classrooms).

This is one reason for the attention given to the STAR research, in Tennessee. The principal investigators, state politicians and teacher representatives, set up a study with a bold experimental design involving the random allocation of pupils and teachers to three types of classes in the same school: 'small' classes (13–17 pupils), 'regular' classes (22–5 pupils), and 'regular' with full-time teacher aide. The project involved over 7,000 pupils in 79 schools and students were followed from kindergarten (aged 5) to third grade (aged 8). In both reading and mathematics, pupils in small classes performed significantly better than pupils in regular classes. In fourth grade (aged 9) the pupils returned to regular classes and the experiment ended, but gains were still evident after a further three years, that is, grades 4 to 6 (Finn and Achilles

1999; Nye et al. 1993; Word et al. 1990), and then at later points still (Konstantopoulos and Chung 2009).

The STAR project was an important and timely study and results have provided the basis for a number of educational initiatives and policies in the United States and other countries. There have been criticisms, for example, student attrition from the study, the lack of pupil baseline data, and the possible effect of the allocation to experimental conditions on the validity of conclusions. But later reanalyses tend to support the main findings (for example, Goldstein and Blatchford 1998).

There have also been several other research projects in the United States (the main ones are SAGE, Primetime and California) and these are reviewed by Biddle and Berliner (2002) and Ehrenberg et al. (2001). The strongest of these – SAGE – produced positive effects on pupil academic outcomes (Molnar et al. 1999). But results are difficult to interpret because the study involved changes to pupil–teacher ratios rather than class-size reductions. Additionally, this was only one of several educational interventions, so it is not clear what caused any effects on pupil outcomes. Overall, results from these studies are not conclusive.

A recent experimental study was commissioned by the Hong Kong Government to address a policy debate about the value of CSR (Galton and Pell 2010). This adopted a complex research design within which experimental CSR classes were compared with control classes in the same schools. This was essentially a quasi-experimental design (rather than a randomised design, as in STAR). Along with CSR, the teachers in the experimental schools also took part in extensive and varied professional development (PD), and so it is not possible to distinguish effects of CSR and PD. Even so, differences between experimental and control classes on academic outcomes were not marked. Galton and Pell (2010) offer a number of explanations for these findings, including the tendency of teachers to rely on textbooks and not change their teaching in small classes (see Chapter 10 for more on the issue of change of teaching in small classes).

There has been recent attention paid to class size effects, or lack of them, from coverage of the 2019 Nobel Prize in Economic Sciences (Royal Swedish Academy of Sciences 2019). The research recognised was part of an ambitious research programme designed to address fundamental issues about resourcing in poor developing countries. One study was based in Kenya where there is a high level of absenteeism among teachers and educational institutions are generally weak. A study by Duflo et al. (2015) compared the effects of employing teachers on short-term contracts with lowering the pupil–teacher ratio by having

fewer pupils per permanently employed teacher. They found that pupils who had teachers on short-term contracts had significantly better test results, but that having fewer pupils per permanently employed teacher had no significant effects. Although the research programme overall is highly impressive, there is uncertainty about whether results in a particular country, where teacher absenteeism is very high and security of employment low, can be translated to other countries. We are also unclear what the exact effect was on class size changes as experienced by pupils. There is, in addition, uncertainty about what went on in these schools – for instance, whether teachers changed their practices with fewer pupils. Class sizes were reduced from about 80 to about 40, which is a sizeable reduction, but the resulting small class size is still very large in comparison to OECD numbers (see [Table 1.1](#) on p. 7). It is then difficult to draw strong conclusions about class size effects, not helped by the fact that this article at least does not refer at all to the literature on or debates about class size effects.

Longitudinal correlational studies

There is a second and alternative approach to establishing whether class size affects pupil attainment, which is to try to capture the real and complex world of education, rather than control one feature of it. Despite the common view that experimental designs provide the gold standard of evidence in the social sciences, in educational research they can have some overlooked limitations. They are not, for example, easily able to cover the full range of class sizes in schools (the STAR project compared what by UK standards would be small (23) versus very small classes (17), and there can be unintended effects on the attitudes and behaviour of participants – for instance, as just mentioned, parents might be unhappy about and perhaps seek to compensate for the assignment of their child to a larger class). An alternative, and possibly more valid approach, is to examine relationships between class size and pupil academic outcomes, as they occur in the real world. One can make adjustments, statistically, for potentially confounding factors such as pupils' prior attainment, level of income and disadvantage, teacher characteristics and so on. An important advantage of this approach is that it allows us to capture the range of class sizes as they occur around the country, rather than artificially creating or selecting particular class sizes to compare.

The disadvantage from a methodological point of view is that it becomes difficult to be sure that there is not something else correlated with class size that might account for any relationship found between

class size and pupil outcomes. However, the hope is that this problem is minimised with dedicated research, with carefully created measures to capture potentially confounding factors, which are then controlled for statistically. To give a very basic example, it is well understood that comparing the academic achievements of pupils in selective versus non-selective secondary schools is problematic if one simply compares achievement scores at, say, 16 years. By definition, children in selective schools are already higher achievers at school entry. To be a fair test, one needs to control for children's attainment levels on entry into selective and non-selective schools, more effectively comparing the progress of pupils in the two types of schools – or, in an oft-used phrase, comparing the 'value added' of schools, a much fairer comparison. The same logic applies to non-experimental research on class size, in which one controls for factors likely to be correlated with class size and attainment, such as pupil prior attainment and social disadvantage. Such designs necessarily have to be longitudinal, that is, follow pupils over time.

The large scale UK study – the Class Size and Pupil Adult Ratio (CSPAR) project – used such a longitudinal naturalistic design and studied the effect of class size on pupils' academic attainment, as well as classroom processes such as teaching, pupil attention and pupil relations. As we saw in [Chapter 2](#), CSPAR tracked over 8,000 pupils in over 200 schools, from school entry (at 4 or 5 years old) to the end of the primary school stage (11 years). It employed a non-experimental multi-method longitudinal design, measuring the effects of natural variations in class size with multi-level regression statistical analyses in order to determine effects of class size, controlling for other factors such as pupil prior attainment, gender and level of disadvantage. As we saw in [Chapter 2](#), these analyses were complemented and informed by a number of other forms of data collection, aimed at providing data on classroom processes, which we examine in later chapters. Results for the KS1 stage are described in Blatchford et al. (2002a) and Blatchford et al. (2003a and b).

In brief, there was a clear, statistically significant, though modest, effect of class size on children's academic attainment over the first year of school (4/5 years), in both literacy and mathematics, even after adjusting for other possible confounding factors. The effect sizes were comparable to that reported by the STAR project (see Blatchford et al. 2003b for full details). An interesting finding was that the relationship between class size and first (reception) year progress in literacy varied for pupils of differing baseline attainment (bottom 25 per cent, middle 50 per cent and top 25 per cent). As class size got smaller, there was a statistically significant

increase in attainment for all three groups, though the effect was larger for pupils with lower baseline attainment. Effects were still evident on literacy progress at the end of the second year of school (Year 1, age 5–6), though by the end of the third year the effects were not clear. There were no clear longer-term effects of class size differences on mathematics achievement. Though this finding indicates that the early benefits of smaller classes ‘wash out’ after two years in school, there were no restrictions in terms of which size of class the pupils moved to from year to year.

The CSPAR provided some additional findings about class size effects on attainment. The biggest changes in class size took place between reception and Year 1 (that is, between the first and second year of schooling) and we found a significant ‘disruption’ effect on children’s educational progress as a consequence, that is, moving to a class of a different size, especially a larger class, was disruptive in the sense of negatively affecting pupils’ attainments. But we also found that the effect of small reception classes carried over into Year 1 only when children moved into a similar or smaller class. We are not aware of any other studies which have addressed the effect of continuity in class sizes over years (this was not possible with the STAR experimental study because class size was fixed for four school years, something unlikely in the real world of schools). The policy implication of this result seems to be that, in addition to smaller classes in the first year, it is advisable to maintain smaller classes where possible, and to seek to ensure stability in class sizes across years.

As for KS2 (7–11 years), we found that pupil attainment at the end of the school year was highly dependent on pupil attainment at the end of the previous school year. Statistical analyses did not find evidence that children in smaller classes over KS2 made more progress in mathematics, literacy or science.

Although sophisticated, the CSPAR was still essentially correlational in design and so one cannot be exactly sure about causal direction. However, key potentially confounding variables were controlled for, and one can be fairly confident that results reveal an *independent* effect of class size on pupil attainment – that is, smaller classes lead to higher academic attainment in the early years of school – over and above other factors.

Natural design experiments

It is important to repeat that a true randomised experimental study of class size effects is exceptionally difficult to set up, and this is one of the

reasons for the search for an alternative research design, such as that used in the longitudinal CSPAR study. The central problem, as mentioned previously, is ensuring that there is no extraneous and unmeasured factor which might account for any effects, or lack of effects, of class size on pupil attainment. An alternative research design has been used in more recent years, which relies on the strict maximum class size limits used in some countries. For these, when class sizes meet or exceed a maximum then, automatically, an extra class must be formed. So if the maximum is 30 pupils in a class, when there are 60 in that year group there will be two classes. If the total number of pupils exceeds 60, however, then an extra class must be formed and class sizes in the now three classes drop accordingly. The attraction of this design is that a number of other potentially influential variables are held constant, and so it offers another valuable way of getting at the causal effect of class size. Such studies are reviewed in Bressoux (2016), Bressoux et al. (2019), Fredricksson et al. (2013) and Whitmore Schanzenbach (2016). Perhaps the most widely cited of such studies was conducted by Angrist and Lavy (1999) in Israel, who found strong improvements in mathematics and reading with reduced class sizes, and particularly marked improvements for disadvantaged pupils. Fredricksson et al. (2013) studied data on pupils aged 10 and 13 years in Sweden when subject to a maximum 30 in a class rule, and found rather impressively that they had higher cognitive skills, as measured by IQ-like tests, at 13 years. Even more impressive, they found that in adulthood students who had been in smaller classes had higher levels of completed education, wages and earnings.

Class size and extra adults

Today, in many countries, there are many paraprofessionals in addition to teachers working in classrooms. This is particularly the case in England and Wales, where teaching assistants (TAs) now make up a quarter of the entire school workforce and spend much of their time in predominantly instructional activities with students (Blatchford et al. 2012). Amazingly, on a straight headcount, there were at the end of 2018 more TAs than teachers in English primary schools (250,000 teachers versus 273,000 TAs – DfE 2019).

From the point of view of the class size debate, the advent of TAs in large numbers is important. They do not seem to have had an effect on class size in the sense of the number of pupils on a class register, and TAs will not have affected pupil–teacher ratios (PTRs), but they have had a major effect on pupil–*adult* ratios. If there are about as many TAs

as teachers in the system, then the advent of TAs has effectively halved pupil–adult ratios.

As we see in other chapters in this book, particularly [Chapter 9](#), one of the main reasons for the increase in TAs was to help teachers by giving attention to the children in the class who were struggling or needed additional support. This meant the teacher could devote more time to the rest of the pupils. This strategy therefore brings about some of the advantages of smaller numbers of pupils to adults while not increasing the numbers of teachers. It means that pupils who are most in need of experienced teaching support have tended to be assigned to paraprofessionals (see [Giangreco et al. 2005](#)). Although positive findings have come from studies of the effectiveness of specific curriculum interventions given by TAs ([Alborz et al. 2009](#)), the largest study yet conducted on the effect of everyday TA support on pupil academic outcomes (the DISS project – see [Blatchford et al. 2012](#)) found negative results – that is, those pupils with more support from TAs made less progress when compared to similar pupils with less or no support. This was the case even controlling for the reasons why pupils were allocated more support in the first place (usually reflected in low initial attainment or classification of special educational need). The main reason for this negative finding is essentially that children supported by TAs, often those who are struggling, then receive less attention from, and in a sense become separated from, teachers (see [Blatchford et al. 2012](#)). Support from a TA was also pedagogically less helpful for the pupil, for instance, too easily providing answers for them ([Radford et al. 2011](#)). This shows again the importance of understanding overall correlational results by careful study of what is happening in classrooms. This is not a criticism of TAs themselves, but points to problems with school decisions about their deployment, and their training and preparation. Moreover, there did not appear to be a benefit to the remaining children in the class not supported by the TA ([Blatchford et al. 2012](#)). It therefore seems that additional (non-teacher) staff in classes are not an adequate alternative to CSR. We return to the deployment of TAs in [Chapter 9](#).

In some countries there has been a move to increase the density of teachers in schools as one approach to improving educational standards. In contrast to TAs, this will profoundly affect the PTR and, potentially, class size as well, depending on how the extra teachers are deployed. Such a move has been recently introduced in Norway (see a description in [Solheim and Opheim 2019](#)), and results are currently being analysed.

We return to the use of extra teachers as an alternative to class size reduction in our conclusions in [Chapter 11](#).

Class size and other pupil academic ‘outcomes’

We now turn to another kind of pupil ‘outcome’ – not achievement in school subject areas so much as pupil behaviour and engagement in the class. We have argued that the almost exclusive focus in most research on class size and pupil ‘outcomes’ in terms of achievements in the main curriculum areas of literacy and mathematics is understandable, given the importance of these areas in any consideration of academic progress, but has provided a narrow picture of class size effects.

In this section we first review the background to an interest in class size and pupil engagement, and then look at results from the observational part of the DISS study.

There is a good deal of evidence going back many years that involvement in academic activities – what has variously been called pupil attentiveness, active learning time or time on-task – is related to pupils’ achievement in school (for example, Creemers 1994; Lan et al. 2009; Rowe 1995). This is hardly surprising – common sense suggests that involvement and effort in a topic is likely to be helpful if a child is to do well in that subject.

Some early research suggests a connection between size of class and pupil attentiveness. Cooper (1989) reviews studies that show that pupils in smaller classes attend more and spend more time on-task, participate more and are more absorbed in what they are doing. Cahen et al. (1983) argue that pupil attention is greater in smaller classes because pupils are not lost in the crowd and have more opportunities for participating. Interestingly, in light of our observation results to be reported soon, the authors speculate that the effect of class size on attentiveness is most pronounced in the case of low-attainers, because teachers can bring them out more. Other early studies report that large classes lead to more student misbehaviour (Pate Bain and Achilles 1986; Glass and Smith 1978; Johnston 1989). However, not all research has found a link between class size and pupil engagement: Shapson et al. (1980) did not find that pupils in smaller classes participated more in assigned tasks and Bourke (1986) found no class size effect on student engagement at primary level.

Finn et al. (2003) show that the research basis for conclusions about class size and pupil engagement is not always strong with, for example, methodological weaknesses to studies and few rigorous observation studies of actual ongoing behaviour. Finn and colleagues have, though, strongly expressed the connection between small classes and pupil attention. Finn and Achilles (1999) argue that:

The evidence indicates that the key to the benefits of small classes is increased student engagement in learning. In a small class, every student is in the firing line. It is difficult or impossible to withdraw from teaching–learning interactions in a small-class setting ... When class sizes are reduced, the pressure is increased for each student to participate in learning, and every student becomes more salient to the teacher. As a result, there is more instructional contact, and student learning behaviors are improved. (1999, 103)

Finn et al. (2003) later developed a conceptual case for why student classroom engagement is the key process that explains why smaller classes lead to better attainment. They conclude that class size affects student engagement more than teaching.

Engagement in class – on- and off-task behaviour – results from the DISS observation study

In this section we look in detail at the relationship between class size and pupils' classroom engagement through the results from the observation study component of the DISS study. This study is valuable because it observed pupils at four age levels across primary and secondary schools and made use of a rigorous moment by moment observation analysis of pupil on- and off-task behaviour. This is the same method as that described in the next chapter to analyse the interactions between teachers and pupils.

We need to be clear about the uses but also the limitations of systematic observation methods of data collection. The analysis of behaviour is couched in terms of the frequency of relatively broad, easily defined and observed behaviours, and cannot describe the intricacies and nuances of attentiveness in classrooms. It is useful, however, because it can precisely, accurately, and reliably record behaviours in fine detail on a moment by moment basis across thousands of observation points. This, if done correctly, can provide a representative picture of a given child's behaviour in classrooms. Scaled up over a sample of pupils it provides a representative picture for pupils of that age and background. It also allows comparisons between groups of pupils, for example, between boys and girls, and between those differing in initial attainment. It is labour intensive, but useful for this chapter because it provides a numerical account of the relationship between class size and pupil attentiveness.

As described in [Chapter 2](#), the DISS study included a systematic observation component in which observations were carried out in 49 mainstream schools, 27 primary schools and 22 secondary schools. The observations were on a sub-sample of eight pupils per class, and pupils were classified into three attainment groups – low, medium or high – based on a classification made by the teacher. There were 686 pupils observed in total. Observations were conducted on each child in turn in blocks of 10×10-second duration time intervals, with gaps of 20 seconds between observations to allow recording of what took place in the previous 10 seconds. There were 34,420 10-second observations in total. Visits generally lasted four days per school and observations were made in maths, English and science.

We think it is important to convey to the reader how we went about trying to get a reliable measure of on- and off-task behaviour, and so we now describe in a little detail how we categorised pupil behaviour. This will also help when we introduce results from systematic observations on pupil–teacher interaction in the next chapter.

Logically, there are three mutually exclusive forms of interaction or ‘social modes’ a child can be engaged in at any given moment in the classroom – first, when with their teacher (or other adult); second, when with other children; and, third, when not interacting with adults or pupils (usually working individually). Each child was observed for each 10-second time interval in terms of these three ‘social modes’ and the child’s behaviour was also coded as being on- or off-task within each of these three modes. (There were also many other categories of behaviour within each social mode, some of which are described in later chapters.) On-task behaviour in the child–teacher mode was defined as all behaviours that were concerned with work; on-task behaviour in the pupil–pupil mode was defined as all contacts with other children that were concerned with the substantive topic of work; and on-task behaviour in the not-interacting mode was defined as all allocated tasks and all target child behaviour when not interacting that was connected to their own work activity. These three totals were then added to give a total on-task score for each child.

A similar logic was used to construct a total off-task score for each child. Off-task behaviour was defined as behaviour that was clearly not related to the work. There is of course an issue concerning how broad this should be. What about, for example, times when the child was engaged in procedural talk – about materials or social talk, or about the child’s life outside school or personal matters? We did in fact code these

two types of behaviour but in order to be clear and consistent we only categorised a behaviour as off-task when children were deliberately and obviously engaged in actions not acceptable to the teacher. Social talk is a bit problematic in that it is in a sense off-task but many teachers allow a degree of this kind of talking while children work, and so it was only coded off-task if clearly marked as such by the teacher. Total off-task behaviour was all off-task behaviour in the three social modes: child to teacher, pupil to pupil and not interacting. Examples of off-task talk with other pupils would be mucking about, fooling around and times that the target child was aggressive (verbally or physically) towards other children. Individual not-interacting off-task behaviours were either 'active' (for example, the child focuses on something other than task in hand) or 'passive' (the child is disengaged during the task activity, for example, daydreaming).

As described in [Chapter 2](#), each observer was trained in the use of the categories so that all observers coded the same behaviours in the same way (technically the categories were therefore valid and reliable). For each 10-second time interval the observers noted which of the observation categories occurred and they would also have noted the class size at that time. This is a thorough, and very time-consuming, type of data collection. It also means that class size was not measured in terms of some general figure on a class register, but rather in terms of the exact number of pupils in the classroom at the time of a given observation. It also allowed a complex and sophisticated statistical analysis of the data based on the 10-second observation interval as the unit of analysis. This meant we could conduct a powerful analysis of the co-occurrence of behaviours and class size – that is, whether certain behaviours occurred in a 10-second time interval with a particular class size. This is much more accurate than the more obvious and easier method of examining associations based on totals across all observations for each pupil. Interested readers can find more about the observation methods and statistical analyses used in [Blatchford et al. \(2011a\)](#).

In the graphs below we show the probability of a behaviour occurring for any given size of class, so we can compare the probability of a behaviour occurring in a large class of 30 versus a relatively small class of 15. These probabilities are useful, and easily interpretable, that is, they can be taken as the occurrence of any given behaviour as a proportion of the total number of observations. To give one example: a probability of 0.8 for an observation category occurring in a class size of 30 means that the behaviour occurred in 80 per cent of all observations.

Total pupils on-task

We look first at total on-task behaviour. The results showed that, for primary schools, as class size increased there was a statistically significant corresponding decrease in on-task behaviour. The converse result also applied: as class size decreased, the amount of on-task behaviour increased. So there is a greater likelihood that pupils will be on-task in smaller classes.

At primary level, the effect of class size did not vary by pupil attainment level (that is, the effect was found for all three groups, low-, medium- and high-attainers). The results for secondary pupils, however, showed that the effect of class size varied by attainment group. There was no significant effect of class size on on-task behaviour for pupils in the medium- and high-attainment groups, but for pupils in the low-attainment group, a larger number of pupils was associated with a decreased occurrence of on-task behaviour. The effect was marked: a five-pupil increase in class size was associated with the odds of on-task behaviour decreasing by almost a quarter. Figure 3.1 shows that the difference between 30 and 15 is about 78 per cent versus 88 per cent, that is, a 10 per cent difference for low-attaining pupils – a larger difference in comparison to primary schools.

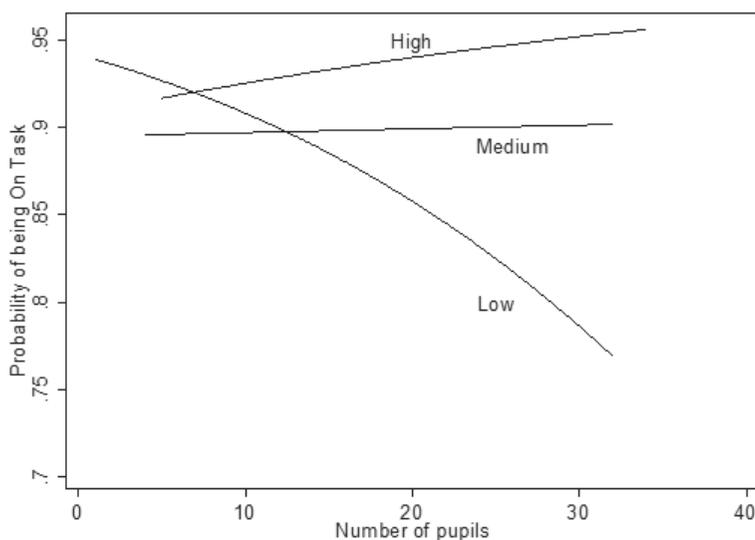


Figure 3.1: Class size and total on-task behaviour (secondary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier.

Total pupils off-task

The relationship between the number of pupils and total off-task behaviour varied for pupils of differing attainment. For primary schools there was an increase in off-task behaviour with larger classes for low- and medium-attaining pupils. For the low-attainment group, a five-pupil increase in class size was associated with the odds of off-task behaviour increasing by 11 per cent. There was no significant effect of class size for the high-attainers. The results for primary schools are illustrated in Figure 3.2.

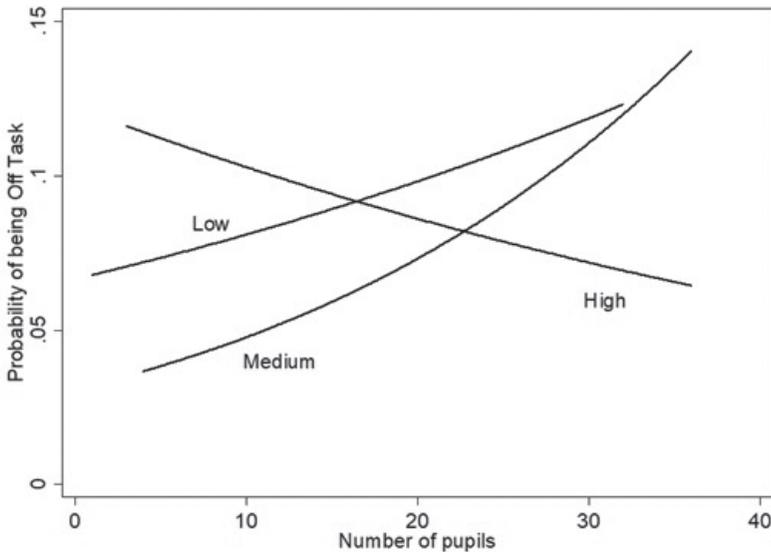


Figure 3.2: Class size and total off-task behaviour (primary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier.

The results for secondary schools showed a highly significant effect of class size for low-attaining pupils only. Our statistical analysis showed that a five-pupil increase in class size was associated with the odds of off-task behaviour increasing by 40 per cent for this group. Looking at this in terms of a comparison of the probability of occurrence with 15 versus 30 in a class (see Figure 3.3) shows that 0.26 of observations were off-task for a class size of 30, but only 0.11 of observations were off-task with 15 in a class. This is the difference between 26 per cent and 11 per cent of all observations. Low-attainers therefore spend more

than twice as much time off-task in large versus small classes, a sizeable difference.

There was no strong evidence of an effect of class size for either the medium or high groups, although there was slight evidence that off-task was less likely in larger classes for the high-attainers. However, this result was not quite statistically significant ($p = .07$).

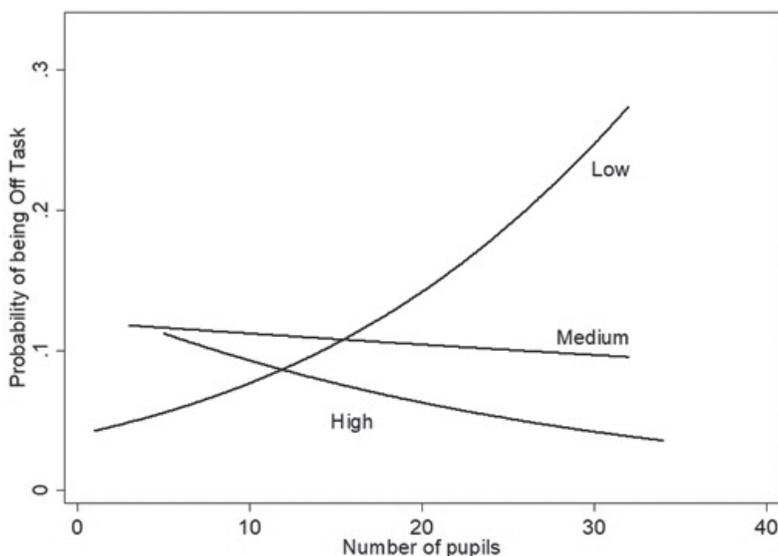


Figure 3.3: Class size and total off-task behaviour (secondary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier

Results from the TQ: Effects on pupils' learning and behaviour

Having looked specifically at pupils' on- and off-task behaviour in the last section, we now look more broadly at class size in relation to pupils' learning and behaviour. In this section we therefore move from results based on detailed observations to focus on the teachers' experiences of class size in relation to pupil learning. As we saw in Chapter 2, one of the main research methods of data collection in the CSPAR study was the annual teachers' questionnaire (TQ) sent out when pupils were in Years 4, 5 and 6 (that is, when aged 8–9, 9–10 and 10–11 years). One of the questions asked of teachers in the TQ in Year 4 and Year 5 was 'please comment on how the number of children in your class has affected their behaviour and learning' (this question allowed for the option that class

size did not affect behaviour and learning). When the children were in Year 6, the last year of KS2, aged 10–11 years, we asked about behaviour and learning separately. We left the questions deliberately open so that teachers could relate this to the size of the class they were teaching at the time of answering, whether large or small. Sometimes teachers contrasted their current class with a previous class size, and the question allowed them to refer to a previous experience, perhaps with a different size of class, if they thought that was relevant. The results were similar across years and so, for the sake of brevity and to avoid duplication, in this chapter we only report on the results from Year 6 (age 10–11 years).

The results were clear. The vast majority of the 108 Year 6 teachers who responded thought that a large class made learning and behaviour worse and a small class made them better. For the most part, the description of their behaviour was broad, for example, in terms of learning or behaviour being just worse or better, or general terms like ‘learnt more’, ‘misbehaviour’, ‘good behaviour’. One teacher with a class of 32 pupils was very terse, as if it was hardly worth mentioning: ‘Adversely, obviously’ (32). (Note: throughout, numbers in brackets are the class size.)

A few teachers explained why they felt that behaviour was more of a problem in a larger class: ‘a higher percentage of children will be involved by a small number of children’s poor behaviour’ (32). Conversely a small class meant that behaviour was better: ‘Behaviour is able to be contained as the class is small. There is a more intimate “feel” to the class. They have a group identity and it’s easier to discuss rules etc.’ (24). Another teacher with a small class said: ‘Class is lively but having 18 in the class has made discipline easier.’

Instead of any detail in their descriptions of learning and behaviour, a feature of some of the teachers’ responses was that they focused mostly on how class size affected their own teaching and classroom management. A large class made these more difficult and a small class made it easier. So although the question asked of them was about class size and pupil learning and behaviour, the teachers mostly responded in terms of the effect on their own teaching.

The ways in which class size affected teaching and classroom management are discussed in more detail in the next chapter. Here we note – and this is very much in line with the results reported in the next chapter – that by far the most frequent response was that a large class made it more difficult to give attention to individual pupils (61 out of the 107 total teachers at Year 6 for the learning question). As we shall see again and again in this book, a major problem with larger classes over

30 is therefore the way it means teachers cannot provide the individual attention they feel each child should get, and this in turn leads to less learning and more bad behaviour.

A number of comments also referred in one way or another to how characteristics of the pupils in the class moderated or affected the connection between class size and pupil learning and behaviour. This was usually because there were a small group of difficult pupils, which made the teacher's task and learning more difficult in a larger class. This is an issue we pick up in the chapter on teaching (Chapter 4) and again in the chapters on grouping practices, peer relations and types of pupils in the class (Chapters 5, 6 and 9).

Other non-attainment pupil outcomes

So far in this chapter we have looked at (1) class size and attainment, in terms of core subject areas; (2) observation results on class size and classroom engagement; and (3) class size and learning defined more broadly, from the teacher's point of view.

This is still a narrow view of the full range of possible pupil outcomes. Unfortunately our knowledge of the effect of class size on other aspects of school learning is very limited. We have limited information on whether, for example, class size effects differ for different school subjects. It might be that in the face of larger classes, schools and teachers – who may also, as in England, be facing a cut back in funding from government – are forced to prioritise resources for the teaching of English and maths. This might be at the expense of other, non-core subjects like art and design, which are likely to require more space (we shall see in later chapters that class size and space are likely to be connected) and expensive materials. This may adversely affect children's progress in these areas of the curriculum.

But even the possibility that class size effects vary by school subject does not cover all the possible ways that class size can affect pupils. There are likely to be other less obvious ways that class size has effects – effects that may even be more marked than those on academic attainment. What do we have in mind here? During the Leverhulme International Network workshops, described in Chapter 2, we worked with the experienced educators present to identify possible ways class size affects pupils, other than academic attainment. Here is a summary of some of the suggestions: creative work, practical skills, positive pupil attitudes to schoolwork, enthusiasm and confidence, ability to learn independently, motivation, problem solving, critical thinking, well-being. These

suggestions overlap with comments from other experienced educators following our presentations on our class size research.

Similar suggestions also came from teachers in the TQ:

Smaller classes assist the process of building a rapport with pupils – very necessary if general life skills, codes of behaviour and raising pupils' self-esteem are to be valued as much as academic achievement. (Year 5 TQ)

These are of course so far only suggestions from practitioners and would need to be tested in research. It is interesting to think, however, that Cahen and colleagues made this point over 30 years ago:

Typically, achievement tests in reading and mathematics are used to evaluate outcomes. This narrow definition of achievement overlooks learning in other academic areas, areas which may be valued by consumers of education. Also, many of the enrichment areas are intended to promote positive attitudes, enthusiasm, and overall learning skills. These factors may have long-term effects not in evidence on short-term achievement tests. Research in education may be misled by its focus on short-term achievement outcomes. (Cahen et al. 1983, 205–6)

Finn (2019) has also drawn attention to other non-academic pupil outcomes likely to be affected by class size, but also to the lack of research in this area. Small classes might therefore promote more positive attitudes, enthusiasm and overall learning skills rather than narrowly defined subject domain performance, which might help explain the often cited disparity between teachers' confidence in small class effects and more modest results from research on the connection between class size and performance in English and maths. Of course, these are at this stage only suggestions, albeit based on extensive experience of schools. It seems to us that there is a strong case for looking more systematically at other pupil effects or 'outcomes' in relation to class size.

Conclusions

Ahead of a detailed summary of this chapter's main points, we present the **Key Themes** covered in the chapter. Similar key themes boxes are found at the end of subsequent chapters. They are collated and arranged

in Figure 10.1 to provide a visual summary of all the classroom processes identified in this book that are impacted by class size.

Key Themes

Effects on pupils

- Learning/attainment
- Interactive engagement
- Work engagement
- Non-attainment outcomes

Class size and pupil attainment

The CSPAR research found significant effects of class size on academic progress in the first two years of schooling. The size of the effect was similar to the experimental STAR project. It has been pointed out by many that the effect is relatively modest by comparison with other educational interventions. But, as argued earlier in this chapter, it seems to us that this kind of comparison is rather unfair, in that whereas reciprocal teaching, teaching meta-cognitive etc. are distinctive *methods* of teaching, CSR merely sets limits on the numbers of pupils in a class involved. In our view, studies examining just the connection between class size and academic attainment offer only a partial solution to how class size works, and further information on what goes on in classrooms is needed in order to interpret the size of effect. This also connects with the second of our class size conundrums (CSC2): If the effect of class size is relatively modest – and for many this conflicts with their view about the importance of class size – then how do we account for this? The answer we believe is better understanding of what teaching and instruction would be appropriate in classes of different sizes, to which we return in the later chapters of this book.

To return to the CSPAR findings, the clearest result, and one cited by many studies and reviews, is that the effects of class size on academic outcomes are clearest with the youngest students in school. The policy implication seems clear, and over and above any considerations of teaching approaches in different sized classes: it supports smaller class sizes in the first years of school.

The CSPAR provided some additional findings about class size effects on attainment. We found a significant ‘disruption’ effect on children’s educational progress as a consequence of moving to a class of a different size, especially a larger class – disruptive in the sense of

negatively affecting pupil's attainments. The effect of a small reception class carried over into Year 1 only when children moved into a similar or smaller class. As we have said, the policy implication of this result seems to be that it is advisable to maintain stability in (smaller) class sizes across years.

There have been efforts to establish whether class size effects vary for different groups of pupils. Some studies (for example, STAR, SAGE) conclude that CSR benefits minority and disadvantaged pupils the most (for example, Krueger and Whitmore 2001). However, results from other studies call into question this conclusion. Wilson (2006) points out contradictions in reports using the STAR data, for example, later reports by Konstantopoulos (2008) showed that it was higher ability students who benefited most from small classes and small classes did not reduce the achievement gap. The CSPAR results, however, were clear in showing that small classes had most beneficial effects in the early years for those further behind academically at the start of school (that is, those in the lower 25 per cent of baseline assessments in literacy and maths). This suggests that smaller classes are particularly needed for those pupils with already lower attainment levels.

How do we explain the lack in the CSPAR study of a more obvious effect of class size on older pupils? In line with arguments we develop further in this book, we believe class size is important for older pupils, but that the effects are not so obvious and not necessarily direct. One main aim of this book is to show how class size affects classroom processes in complex and interconnected ways, and how this gets overlooked when just considering class size in relation to pupils' measured academic test scores.

Threshold effects?

It is often said that, to be effective, class sizes need to fall below a certain number, usually 20. We are not convinced by this argument. The Glass meta-analysis found that reductions to anything over 25 pupils per class had little effect; effects increased for class sizes below 20 and especially below 15, and most noticeably for classes below 5! In a way, no reduction is ever enough. Slavin has argued that a class size of three pupils is not as effective as the same time in three one-to-one sessions. The view that effects are unlikely to be marked until classes are reduced to below 20 may have something to do with the class sizes chosen in research. The STAR project, as we have seen, compared classes of about 17 with class sizes of about 23 – and this may be a main reason why the mid-point

between the two is seen as important. But this range of class sizes is not common in many countries, even in the United States, and this is another reason to examine effects of class size across the full range of class sizes, rather than presuppose class sizes likely to be important. In the CSPAR KS1 study there was some indication of a more pronounced effect for class size for different sizes of class (technically there was some evidence of a non-linear relationship), but there was no evidence for a clear threshold. Indeed, we know of no good social psychological or educational reasons that have been advanced to explain *why* there should be a threshold below or above which class size effects change in intensity or character.

We need to recognise that the debate over threshold effects has been conducted in developed countries. For some countries there are much larger class sizes. Recent work in Kenya, for example, found no effect of class size reductions from 80 to 40 (Duflo et al. 2015). We have no evidence to support this view, but it seems unlikely that reductions within this range will have much effect, not least because the ‘smaller’ class size is still large by OECD standards, and because conditions of teacher employment and classroom teaching approaches are different in developing countries.

What we can conclude is that it is probably over-simplistic to talk about optimal class sizes in an exact way.

More ‘first-generation’ research is needed

We repeat that there are few dedicated studies of class size effects on academic attainment. We find it worrying how strong conclusions have been drawn by so many commentators on the basis of so few studies. Citations are mainly to STAR, John Hattie’s meta-analysis and Hanushek’s reviews. But as well as methodological issues, discussed above, this research reviewed is quite dated now. As we said in [Chapter 2](#), many research articles are not dedicated studies but secondary analyses, that is, reviews of existing research not actually conducted by the authors of the reviews. We are not seeking to denigrate the value of high-quality reviews of research, when they make use of existing high-quality datasets, but it is odd that there are to our knowledge no dedicated studies of class size and pupil outcomes currently or recently in the UK, the United States, Australia, Canada and New Zealand – and we find this worrying. One of the few current dedicated studies we know of is in France (Bressoux 2016; Bressoux et al. 2019). We therefore conclude that we need new

first-generation research, that is, high-quality, dedicated, purposefully designed studies of class size and pupil outcomes.

Class size and extra adults

We have seen how today, in many countries, there are many teaching assistants, or their para-professional equivalent, working in classrooms. TAs are often deployed to help teachers by giving attention to the children in the class who were struggling or needed additional support. This might seem to bring some of the advantages of smaller numbers of pupils to adults while not increasing the numbers of teachers. TAs have become one solution to the dual problems that many schools face: how to include pupils with SEND and how to deal with this with large classes. It is difficult to avoid the conclusion that in the face of large class sizes, primary and secondary schools view the employment and deployment of TAs as a key strategic approach to including and meeting the educational needs of low-attaining pupils and those with SEND. However, negative results on the effect of TAs on pupils' academic progress shows that the employment of more TAs is not an answer to large classes, or an alternative to CSR. TAs can though have a positive role to play in classrooms, when their deployment is thought about strategically. Elsewhere we have developed guidance for the deployment of TAs, which allows them to add value to the teacher rather than replace the teacher (Webster et al. 2016), but the problem of class size still remains. We return to the issue of TAs and class size in later chapters, and especially in [Chapter 9](#).

Engagement in class – on- and off-task behaviour

In the DISS study we found that there was a tendency for there to be more pupil on-task and less off-task behaviour as class sizes decreased, and conversely less on-task and more off-task behaviour as class sizes increased. This was affected by the pupil's attainment group. While there was more on-task in smaller classes in primary schools for all attainment groups, at secondary level it was only the low-attainers who showed more on-task behaviour. For illustrative purposes we compared a large class of 30 with a small class of 15 and this showed a difference of about 10 per cent in on-task behaviour for low-attaining pupils. In the case of off-task behaviour, at primary level it was the middle and low pupils who showed most off-task behaviour in larger classes, and at secondary level it was again the low-attainers who tended to be most affected.

We feel that these results are significant because they show that the problem of large classes, especially in the case of older secondary aged pupils, is particularly marked for the pupils who are already attaining at lower levels. In contrast, smaller classes seem to allow a more productive educational environment in the sense that low-attainers are less off-task. Perhaps the most obvious policy implication on results on classroom on-task and engagement is therefore for targeted CSR for older pupils (especially, low-attainers and those with SEND). In [Chapter 9](#) we look at the effects of class size on pupils' behaviour and interaction, in relation to whether or not pupils have SEND.

Non-academic outcomes

We have made the point that there are few studies of class size effects on progress in other school subject areas, and even less research on other pupil 'outcomes'. The almost exclusive concern with academic test scores has had a narrowing effect on research. We listed some possible contenders, for example, creative and practical skills, enthusiasm and confidence, ability to learn independently and motivation. Academics and policy makers may be uncomfortable talking about non-academic pupil outcomes, but focusing only on academic attainment might miss important features of classroom life – which might be vital for effective learning. Future first-generation research will therefore also need to widen the approach to pupil 'outcomes', so that as well as progress in the core subjects of first language, mathematics and science, there is attention to progress in other areas, including practical and creative subjects, where the effects of class size may be more marked.

Pedagogical implications

At the end of those chapters concerned with classroom processes and types of pupils, [Chapters 4 to 9](#), we offer some suggestions for how the results have implications for pedagogy and teaching. Although the pedagogical implications arising out of the results presented in this chapter are not so obvious, one point worth mentioning is the weight teachers clearly give to non-academic aspects of pupils' development. In line with what teachers say, supported by participants in our international network workshops, it is worth considering whether smaller classes are particularly valuable for, for example, practical, investigative and creative aspects.

Solving CSC1

We started this book by saying that there is often a gap between the views of practitioners and the evidence from researchers, policy makers and others when it comes to evidence on the effects of class size. This was our first 'class size conundrum' (CSC1). Following the work for this chapter, one way of accounting for this difference of view is that the two groups may have in mind a different set of outcomes when thinking about class size effects. While policy makers and researchers tend to focus exclusively on academic attainment outcomes, usually in the main curriculum areas of literacy and mathematics, practitioners, like the teachers who responded to the TQ, often have a wider set of processes in mind when thinking about the benefits of class size reduction. Teachers, in other words, are concerned with class size effects in a more dynamic way as they affect the conditions for teaching and the everyday processes of learning. Teachers are therefore more concerned with learning as an ongoing process that takes place in their classrooms over time than with academic attainment as measured at a given point in time.

The lack of interest by researchers and commentators in non-academic pupil outcomes might also help explain the disparity between teachers' confidence in small class effects (which is based on a wide perception of pupil functioning) and more modest results from research (which has mostly focused on academic test results).

It therefore seems to us that the policy/research and the practitioner views have in mind different kinds of effect. The researcher approach (or at least that which only considers class size and attainment) posits a simple causal input output model, while teachers have a more complex interconnected set of processes and outcomes in mind. We feel this helps account for the two different points of view, and therefore helps account for CSC1.

Interconnectedness

We make a final point in this chapter. A key overriding theme to emerge from the teachers' responses to the TQ questions on learning and behaviour was the way they felt that class size and learning were connected through links with other classroom processes, for example, classroom space, types of pupils in the class, the amount of individual and group attention, relationships between the pupils, activities and resources. This is an early sight of one of the key points to emerge

from this book: the way that class size interconnects with many facets of classroom life. It does not affect things singly, but in multiple ways. This is one reason why we believe the effect of class size can be under-emphasised. To use a music production editing analogy, class size may not appear to be a lead instrument or lead vocal but it is always ‘in the mix’, rather like a basic backing instrument that, surreptitiously, has a profound effect on the quality of the overall sound we hear.

In the following chapters we look at different processes related to class size and we hope to shed light on the second of our two class size conundrums (CSC2). In the next chapter we address the relationship between class size and teaching.

4

Class size and classroom processes: Teaching

Introduction

The key aim of this chapter is to draw on complementary sources of data in order to provide a detailed, comprehensive and informative analysis of ways in which teaching is affected by class size. In particular, we draw out insights from three different detailed accounts: first, from teachers about how class size has affected their teaching; second, from moment by moment systematic observations of teacher–pupil interactions (with additional results from the DISS study – see [Chapter 2](#)); and third, from detailed case studies, involving interviews with teachers, headteachers and pupils and semi-structured classroom observations, in classes of different sizes.

In many ways this is the main chapter in this book. In the previous chapter we looked at the evidence for connections between class size and pupil ‘outcomes’. We believe this went some way to solving our first ‘class size conundrum’ (CSC1), that is, the gap between research findings on the modest connection between class size and pupil attainment and the strong and persistent view of many practitioners that class size matters.

To make further progress in our examination of class size effects we now need to turn our attention to how class size affects what happens in the classroom. This will, we hope, also address our second class size conundrum (CSC2), that is, asking why the effects of class size on pupil outcomes are not more marked – remembering that the effects in the CSPAR study were significant, but modest.

The effect of class size, if there is one, must be expressed somehow in processes within the classroom itself. Given the central role of the teacher in classroom life, the main classroom process is likely to be the teaching that takes place, as seen in the interactions and relationships between teachers and pupils, classroom management, and so on. In relation to CSC2, it is also important to examine teaching in order to explain why there may be no or limited impact of class size. Perhaps teachers in small classes don't take advantage of any opportunities afforded them? Or perhaps teachers in large classes compensate in certain ways?

We first of all make what we think is an important but basic point: teaching is not just about delivering or presenting a lecture or lesson to the class. This might seem obvious to many, but it seems, unfortunately, to be the implicit assumption critics have in mind when saying class size is not important. Delivering material is a main facet of teaching, of course. It does not matter so much how many students there are if all that is required is to listen to a lecture about, for example, what happened to British troops at Dunkirk in the Second World War or some aspect of algebra. This is not to devalue the purpose of an engaging presentation, and all school teachers will of course use whole class delivery at times. But teaching involves, or should involve, so much more than that. For example, it will also involve working with groups, supporting collaborative group work and supporting individual pupils who need help. Teachers will also need to monitor, give feedback on and assess work, both written and ongoing. Teaching will in addition involve efforts to stretch and challenge pupils, drawing on their contributions, and probing and extending their understanding. As part of teaching, teachers will also need to set up equipment and resources, as well as a range of activities, to meet curriculum objectives and support the learning of pupils.

It is a central conclusion of this chapter, and of this book, that these everyday facets of teaching are not often recognised in comments about the unimportance of class size – yet they are both vital and influenced by the size of the class. A main aim of this chapter and this book is to show just how.

A teacher's view of class size

We start this chapter with an account of an informal conversation between PB and a history teacher in a South London secondary school. The teacher is known to PB. He is committed and conscientious and, though aware of the value of well-grounded research evidence, has a

healthy scepticism of strong opinions based on research, especially when they don't accord with his own experience. PB asked the teacher about his own classroom experience as a practising teacher.

He took a few moments to think about the question before saying that he thought that the ideal class size for one of the current Year 11 (15–16 years) classes he was teaching, and whose books he was just marking, would be 16–20 pupils. He thought a smaller class size like this allowed better teaching because there was more individual attention and management and control were easier. In a larger class it is easier for students to lose attention, while in a smaller class there is less off-task behaviour. He made the interesting point that when the number of naughty and disruptive pupils in the class reach a critical mass, it is much harder to maintain control, so two disruptive pupils in a class of 16 might be manageable, but four in a class of 32 can be far more challenging.

Reflecting further on the benefits of smaller classes for teaching, the teacher said that it is possible to give more detailed individual feedback, both written and also live feedback on ongoing work. One can 'home in' on certain things in order to test and develop a concept or point. Thinking about a topic he was teaching at the moment, he identified what we might think of as another kind of critical mass process connected to class size. He pointed out that with 16 in the class he could give them a task to do in silence, which is more likely to be maintained than in a larger class. In addition, he can then go round and monitor the work of individual pupils and give suggestions. With, say, 30 in the class the potential for disruption is more obvious, and so he would be more likely to direct the class from the front and scan everyone from there. It would then be accordingly less easy to give live feedback to individuals. He said that just as noise is infectious, so is silence; silence in a smaller class becomes self-sustaining.

The teacher also thought that class size can affect the quality of teaching. In a small class he was more likely to be open to trying out new things, more open to challenging the students, and exploring issues around the topic. He made two further points on teaching and class size: he felt that 'The energy flow is more malleable in a smaller class', meaning that the teacher can be more flexible in how they make use of student contributions and work, and that 'the risk/reward ratio is higher in a larger class', with the result that a larger class leads to safer styles of teaching, more centred on control and less cognitively challenging.

The last point he made was that class size effects will be affected by the types of pupils in the class. Class size matters more in the low-attaining secondary school sets he teaches.

He was careful to point out that the key factor is the effectiveness and quality of the teacher. A small class in the hands of a poor teacher is still likely to be badly taught and their progress limited. He gave the example of a trainee teacher in his school who felt awkward when the children in a small class were engaged in individual work, and consequently spoke too much – an interesting example of how not to make the most of a small class, a theme we return to in this book.

It sounds like this was a long interview, but in truth it did not take long for a number of key, lived connections between class size and teaching to emerge. We need to say of course, that though grounded in everyday teaching experiences, the comments just reported are anecdotal, and are the experience of one person, who is mostly referring to children in their last years at secondary school. Nevertheless, it indicates that, other things being equal, from the teacher's perspective there are some important ways in which a small class can facilitate higher quality teaching and more effective classroom management. As we shall see, many of the points that emerged in this conversation are mirrored in the thorough analysis of interconnections between class size and teaching, to which we soon turn.

The study of teaching

It has been argued by an influential educationalist that the most important driver of an effective education system is the quality of teaching (Wiliam 2013). It is hard to disagree with this, and it is therefore vital that we seek to better understand what constitutes high-quality teaching and effective modes of classroom interaction. This is not straightforward, however. When thought about generally, the terms 'teaching' and 'pedagogy' cover a number of features: tasks and activities, interactions and judgements framed and supported by classroom organisation, pupil organisation, time and the curriculum, and by classroom routines, rules and rituals. An influential educational researcher, Nate Gage, argued that 'Teaching is the central process of education' (Gage 1985). He considered classroom teaching in terms of such things as: 'lecturing and tutoring but all other types of interactions such as teacher–pupil questioning, pupil responding and initiations, as well as pupil work at tables and desks, and the managerial activities that maintain the whole process.' Arends (1994) argued that teachers, regardless of the age of their pupils, their subject areas, or the types of schools in which they teach, are asked to perform three important functions: first, executive (providing leadership to students); second,

interactive (face to face instructions with students); and third, organisational (working with colleagues, parents and others).

There has been an extensive but very diverse research literature on teaching and teaching methods, which is too vast to be reviewed here. In the book *The Child at School* (Blatchford et al. 2016a), two main strands of research on teaching are reviewed. First, we have quantitative approaches, as seen in the work of Flanders (1970), ‘process-product’ research (Brophy and Good 1986), the descriptive observation studies of Galton et al. (1980; 1999), which identified teaching styles and their effects on pupils’ progress, and more recent quantitative research on school and teacher effectiveness which tends to stress the importance of direct instruction, in which the teacher actively engages pupils by bringing the content to the whole class (see Ko et al. 2013; Kyriacou 2009; Muijs and Reynolds 2011). A more recent tradition of quantitative research is seen in work by Pianta and colleagues in the United States on teacher–pupil relationships (Hamre and Pianta 2010).

A second approach to teaching is to take sociocultural approaches that build on interpretations of Vygotskian theory, in which the use of language is seen to have a privileged role in transforming children’s thinking. There has been much concern from this perspective with what are seen as the limitations of a lot of teacher to pupil dialogue, and in particular the ubiquity of closed questioning and the three-part teacher sequence: initiation, pupil response, teacher feedback – the ‘IRF’ pattern (Howe and Abedin 2013). Many in this tradition have argued that this reliance on eliciting simple factual right or wrong answers is unlikely to develop pupils’ knowledge or understanding (Alexander 2001). Far more likely to be cognitively challenging is ‘dialogic thinking’ (Alexander 2004) or ‘exploratory talk’ (Mercer and Howe 2012), which encourages co-reasoning, sharing knowledge and evaluating evidence. Myhill, Jones and Hopper (2006) make the important point that one reason for the ubiquity of conventional limited teacher questioning styles is the close connection with teacher control, especially important given the size of many classes and the curriculum and assessment imperatives within which teachers have to operate.

Two other psychological approaches to teaching have been influential. Resnick (2000), drawing on well-established approaches in psychology, identified two core features of effective pedagogy. The first she called ‘knowledge-based constructivism’ – a deliberate oxymoron that was meant to capture the now well understood interpretive, inferential basis of learning, as well as the responsibility of an educational system

to provide learners with high-quality material from which they can construct. The second core component drew on social developmental and motivational theory and was called by Resnick ‘effort-based learning’. She argues that it is important not to socialise learners into inhibiting views of their own learning and intelligence, and to ensure learners realise effort and application are important in learning.

The influential American psychologist Linda Darling-Hammond has in a number of publications provided a powerful vision of what we can all learn from the science of learning and development to guide effective pedagogies (Darling-Hammond et al. 2020). This is a wide-ranging vision, not one confined to teacher delivery in core subjects areas. Learning is seen as essentially social in nature and relationships, emotion and learning are inextricably linked. Learning is facilitated by teacher feedback and cognitive flexibility and is enhanced by a wide range of curriculum experiences, not a narrow curriculum diet. Darling-Hammond stresses that effective teaching should have at its heart scaffolded instruction, ongoing formative assessment and relevant, engaging tasks.

We are very much in agreement with the views of Resnick and Darling-Hammond, but in line with what we said in [Chapter 1](#) of this book, we also want to add another feature that we believe is also essential as a core feature of an effective pedagogy. Although most people are no doubt aware of the importance of context, in a relatively general sense, what we have in mind here is a consideration of specific classroom contexts within which learning takes place. This means a systematic appreciation of the classroom as a particular context with particular features, which affect learning and motivation, but also teaching. A key dimension of the classroom is the number of pupils in the classroom (and also the characteristics of within classroom groups, which we discuss in the next chapter).

Class size and teaching

But what do we know from research about any connection between class size and teaching? There have been some studies (for example, Cahen et al. 1983; Bourke 1986) and some reviews (for example, Ehrenberg et al. 2001; Finn et al. 2003), but overall there have been few dedicated studies of class size and teaching and insights from research into class size and teaching are limited. As we have seen, Finn et al. (2003) have argued that one of the problems has been the

methodological limitations of much research on class size and teaching, with much that is anecdotal and informal, with little use of, for example, systematic observation studies to capture aspects of teacher–pupil interactions, which could complement the experiences of practitioners.

For a number of academics, the study of class size and teaching is not seen as worthwhile because class size is not thought to be a main factor in affecting pupil academic standards. This sceptical view about the relevance of class size to teaching was given support by the influential review by Ehrenberg et al. (2001) which concluded that the influence of class size was relatively trivial. Shapson et al. (1980), on the basis of a systematic observation study, found no statistically significant differences between class sizes for most teacher activities, and they also found that teachers did not alter the proportion of time spent interacting with the whole class, with groups or with individuals. Worryingly, they found that these observation results were at odds with teachers' own views. Finn et al. (2003) argued that class size effects were likely to be mediated through pupils' engagement more than teaching.

However, common sense and logic might suggest that the number of children in a class will increase the amount of time that teachers spend in procedural matters, like organising books and equipment, and, conversely, decrease the amount of time that can be spent on instruction and dealing with individual children. This is consistent with accounts of teachers' views (Bennett 1996; Pate-Bain et al. 1992), and some previous research (Cooper 1989; Glass et al. 1982). An American study of pupil–adult ratios (the SAGE study) suggests that the most important classroom process, affected by reduced class size, is individualisation of teaching (Molnar et al. 1999). Other research on pupil–adult ratios suggest that there is a tendency for teachers to devote less time to group instruction and more on individual instruction in smaller classes (Betts and Shkolnik 1999).

Several studies have provided more formal models of class size effects on teaching, as we discussed in more detail in [Chapter 2](#). Zahorik et al. (2002) argue that smaller class sizes mean less discipline/more instructional time, more knowledge of students and more teacher enthusiasm, and that, among other things, this leads to more individualisation in teaching. Anderson (2000) proposes that, among other things, reduced class size allows more instructional time and greater knowledge of students.

These specific class size models, though helpful, do not in our view fully capture the factors related to class size identified in this book or

their interconnections. Overall, there is not a clear empirical basis for conclusions about how class size affects teaching.

Our earlier KS1 study (children aged 5–7 years) examined relationships between class size and teaching (Blatchford et al. 2003a; Blatchford et al. 2002b). To summarise: results from the systematic observation component of the study showed consistent evidence that in small classes children were more likely to interact with their teachers, more one-to-one teaching took place, children were more often the focus of a teacher’s attention, more teaching interactions with pupils took place overall, and children more often attended to their teachers. Results from end-of-year teacher-completed questionnaires and case studies suggested that class size affected the amount of individual attention, the immediacy and responsiveness of teachers to children, the sustained and purposeful nature of interaction between teachers and children, the depth of a teacher’s knowledge of children in their classes and sensitivity to individual children’s particular needs. Overall, we proposed (Blatchford et al. 2003a) that in smaller classes there was more likelihood of what we called *teacher support for learning*.

In this chapter we extend this analysis from our earlier study, by analysing the more extensive data from the KS2 stage (pupils aged 7–11 years) of the CSPAR project. As described above, the key aim of this chapter is to draw on complementary sources of data in order to provide a comprehensive analysis of ways in which teaching is affected by class size. In presenting our results on class size and teaching, we look first at teachers’ experiences and views of how class size has affected their teaching; second, we turn to complementary systematic observations of teacher–pupil interactions; and, third, we look at results from detailed case studies of different class sizes.

Results on class size and teaching

TQ results

There were 486 teacher questionnaires (TQs) returned altogether: 206 in Year 4 (8–9 years), 184 in Year 5 (9–10), and 96 in Year 6 (10–11) (see [Chapter 2](#) for details of the sample). In each of these three school years in primary schools, one of the questions asked teachers to comment on whether, and if so how, the number of children in their class had affected their teaching that year. The numbers of responses from teachers could

vary for different questions. For this question on teaching the analysis was based on 394 responses from teachers overall: 115 at Year 4, 175 at Year 5 and 104 at Year 6.

The quotations from the TQ given throughout this book come either from teachers with large classes of 30 or over, or from teachers with smaller classes of 25 or less. Almost all responses from teachers were about the negative impact of large class sizes or the positive impact of small classes. There were very few who were positive about large classes or negative about small classes.

For the analysis of the TQ, a sample of teacher responses was used to devise a coding frame for application across the three school years. In the analysis below, all the quotations were sorted into key categories ('codes'). It was possible that one response from a teacher could result in several different codes. These code categories referred to the effects of both small and large classes; for example, that large classes presented problems, but small classes advantages, when seeking to maximise individual attention to pupils.

Teachers' experiences and views on class size and teaching

We felt it would be helpful to start by presenting some selected longer quotations, provided verbatim, exactly as written by the teachers. These nicely convey the interconnected ways in which class size has effects on, and implications for, teaching in a general sense.

The first quotation shows how a larger class of 36 means the classroom is always crowded, with negative implications for focused work, pupil concentration, and support for pupils.

The classroom is crowded. Almost impossible to sit 36 on carpet for aspects of literacy and numeracy for close focused work. When talking to whole class, children 'at the back' find it difficult to concentrate. There's not enough time to get round to 36 children with support/comments.

Many of the problems discussed in more detail later are highlighted in the quotations below, from two teachers who indicate how their task is made more difficult by having a large class (34 and 35 pupils, respectively). For example, the problems for marking, support for reading, setting up practical tasks and more investigative work, pupil relationships with each other, support for children with SEND, the balance of

individual support versus whole class teaching, problems of differentiating work, and stress for the teacher.

Great stress! Cannot manage to mark up to 5 sets of 34 books each day. Cannot keep up with target setting and assessment records/tasks. Cannot hear children read as often as I'd like. Many arguments in class – too many children working too close together. Find practical tasks a trial – sharing equipment. More children therefore more problems with relationships. Cannot always support SEN children appropriately as a large number of children take up more time in helping with problems. (Year 5 teacher)

It is difficult to spend quality time with the individual to enhance their progress. Whole class teaching has been used mainly, although there are clear groups which require differentiation, particularly in Maths and English. This involves time needed to explain what they are to do, either for additional support or for challenges or extension work to push the more able. Children either wait or have a go at what is set through verbal instructions. Difficult to set specified amount of work because so many progress at different rates. Many children require individual attention. Marking has been difficult to do with the children for immediate feedback, and it has taken enormous time and energy, which could be better spent preparing even more effective lessons. Very rigid regime established with 35 in the class; little time or resources available for the more investigative work, although several sessions are set aside each week for this. Would like to do even more. (Year 5 teacher)

Another quotation shows, yet again, how a large class adversely affects the quality of teaching and the social context within which teachers teach, so there is less individual support and more teaching to larger groups, with accompanying loss of concentration and problems with classroom management.

The classroom is quite large so space has not been a problem. With the high number of pupils I can't give as much individual attention to any one child as I would like. Group work is in fairly large groups which ultimately means some children don't participate and let others do the work. I have to ensure that all children join in/listen which can be difficult with 35 children. I spend considerable time

checking and tend to lose the thread sometimes when dealing with disruptive children. (Year 5 teacher)

The way that class size affects the balance of social/interactive contexts and the costs in terms of the teacher's energy, in turn affecting the quality of teaching and the teacher's relationships with her pupils, is also apparent in the following observation.

As there are 36 children I do find it hard to spend quality time with individuals. Because of this I don't feel I forge such a good relationship with them. There is less time to set individual targets, to discuss these and their work with them. Groups tend to be large and not as intimate, again I feel this affects my relationship with individuals. Groups rarely all get a chance to report back. 36 literacy, science books, extended writing, etc. takes an enormous amount of time to mark. This leaves you less time and energy to plan which in turn affects the quality of my teaching. (Year 5 teacher)

The responses from teachers quoted above bring out the way that the everyday job of teaching can be intimately connected with the classroom contexts within which it takes place, and in particular with the number of pupils. Already we can see the problem with the view that class size is not as important as the quality of teaching. It is not a question of whether teaching or class size is more important but of how they are connected. We now turn to this question and work through the main sets of categories used to code the TQ responses.

Interactive contexts: Individuals/groups/whole class

The first and most prevalent set of codes relate to what we call the 'interactive contexts' within which teaching and learning take place in classrooms. There are three such interactive contexts in any classroom: *individual attention*, *groups* and *whole class*. The results from the TQ make it very clear that the frequency and balance of each are affected by class size. We discuss each interactive context in turn.

Individual attention. The single individual most frequent response to the TQ questions, across the three year groups at KS2, is that class size affects the amount of individualised and one-to-one teaching possible.

Below, we provide just a small sample of the many comments received from teachers with large classes of over 30 pupils.

At the beginning of the year I had 24 children – gradually it has crept up to 32. The quality of learning is far easier and effective when you can talk frequently to children on an individual basis rather than exercise crowd control. (Year 4 teacher)

It has been hard to give children any real one to one time when they have needed it. With so many children, I sometimes feel that I don't even get to speak to certain children before the day ends. (Year 6 teacher)

With a general class of 36 children of mixed ability, it has been challenging this year. More children means each child gets less individual time with you, even to the point that you cannot make 5 groups of maximum 6 children (for, e.g., Guided Reading/Writing). In delivery of lessons size makes no difference but in giving deserved and often needed individual support (e.g., for those with SEN), marking commitment and space considerations, it makes all the difference. (Year 5 teacher)

Conversely, smaller classes were seen by teachers as being much more likely to increase the amount of individual attention.

Small groups have enabled me to be more focussed on individuals – huge improvement, good progression in learning seen. (Year 6 teacher)

I had the 'luxury' of teaching 14 pure Year 6 last year for literacy (the Y5 went to another class). What a difference! I was able to spend considerable time discussing children's written work on an individual basis at least twice a week. I am unable to do so this year. (Year 6 teacher)

We will see later that for teachers with large classes there can be emotional consequences from not being able to spend enough time with individual pupils. And later in this chapter we look at the results from systematic observations on the connection between class size and individual attention.

Groups. The effects of class size were also seen by teachers to affect a second context for learning in classrooms – groups of pupils. This was not revealed so much in the frequency of this particular context for learning but through (1) the way a large class means teachers did

not have time to teach small groups (which for them – like individual attention – is pedagogically desirable); (2) how group size increases with class size, making teaching and classroom management more difficult; and (3) how the quality of group work and teaching to groups is affected by class size. We describe each of these in turn.

1. For some teachers, the consequences of larger classes are that it adversely affects not only the amount of individual attention but also the amount of small group teaching that is possible. So here, the first two quotations indicate that small groups are aligned with one-to-one contexts as pedagogically valuable, and both are seen to be adversely affected by larger class sizes. The teacher in the last quotation feels that a negative consequence of a larger class is that there is less time for quality teaching in small groups, and this in turn means it is difficult to meet all the children's needs, cover the curriculum and do the necessary lesson planning. Underpinning this and many other comments is the strong sense that a larger class means there is less time for teaching and this has a knock-on effect on many essential teaching tasks.

Having only 19 children in my class group (teaching them science and all foundation subjects) has meant that my teaching has been relatively easy and stress free. The class is small enough to give nearly individual attention ... Numeracy group teaching has been with 14 less able children which has meant working with small groups or individual children. (Year 6 teacher)

... with a smaller class size can give small groups more attention. (Year 6 teacher)

Children do not receive enough of your quality time in a small group basis. It is impossible to meet all children's needs (academic, social and emotional), cover all the curriculum areas in the detail that is expected and produce planning documents in the detail required with 5 days full-time contact hours with a class. (Year 4 teacher)

2. Other teachers say that because of a large class size they are forced to teach groups rather than individuals, showing that their

preferred pedagogical context is not to groups but to individual pupils. There is then an interesting distinction here between being forced to teach groups at the expense of a focus on individuals because of class size and preferring to teach small groups and doing a better job of this because of a small class. Quite likely the distinction is affected by the size of the groups: those teachers who say they are forced to teach groups probably have in mind the way a large class means they are forced to teach larger groups than they would like. Another set of responses connected to class size and the group interactive context relates to the management difficulties in teaching and arranging groups in a large class size.

More children = less individual time per pupil and small group work in reality becomes medium size group work. (Year 6 teacher)

Little physical room in classroom ... Grouping for compatibility both socially and for ability – more difficult. (Year 5 teacher)

3. Another way in which class size can affect the group interactive context is shown by those teachers who comment that setting up group work is more difficult with a larger class, and the quality of work and pupil participation in the groups is adversely affected. This is a theme we pursue in more detail in [Chapters 5 and 6](#).

Much of the teaching had to be done as whole class with me leading session. I have 29 children in a small classroom. Group work is very hard due to lack of space. (Year 6 teacher)

The classroom is quite large so space has not been a problem. With the high number of pupils I can't give as much individual attention to any one child as I would like. Group work is in fairly large groups which ultimately means some children don't participate and let others do the work. (Year 6 teacher)

Small classroom means that it has been difficult to make provision for more buoyant group work that is making things, lively group discussions. Disagreements within the class affecting lessons – children more or less on top of one another personal space at a minimum. (Year 5 teacher)

Whole class teaching. The third interactive context within classrooms is the whole class. Though this context was not mentioned specifically that often by teachers, it was in a sense implicit in the large number of comments on individual attention, which we have already seen. In other words, implied in the frequent expressions of concern over the problems in larger classes of attending to individual pupils, is the converse way in which larger classes mean more time therefore necessarily has to be spent teaching the whole class. We have seen a strong preference for teachers to work with individuals and small groups. This pedagogical belief is compromised by large class sizes. This needs to be remembered by those who see no value in smaller classes and who believe that we should even move to larger classes. A large class might not matter if teaching is just about delivering to the whole class, but this is not sufficient or acceptable to many primary school teachers at least.

It is difficult to spend quality time with the individual to enhance their progress. Whole class teaching has been used mainly. (Year 5 teacher)

Much of the teaching had to be done as a whole class with me leading session. I have 29 children in a small classroom. Group work is very hard due to lack of space. (Year 6 teacher)

Interactive qualities of teaching affected by class size

The second main set of responses from the analysis of the TQ concerned comments on how class size has consequences not only for the balance of individual, group or whole class contexts but also on the nature of the teaching that takes place within each context. So, over and above the effects on the prevalence of interactive contexts, there are effects of class size on the type and quality of teaching within each context.

Below, we look at comments on class size and three particular features of teaching, cited by teachers: *control/management*, *live feedback* and *knowledge of pupils*. But first, extra to and separable from these features, were a number of references to the *teaching qualities* that were affected by class size.

Teaching qualities. We were struck, as we typed out the quotations from the TQ, just how inhibited teachers felt their teaching became in larger classes. In contrast, in a small class, teachers, in their own words, felt that their teaching was more (to give examples) 'in depth',

‘higher quality’, ‘effective’, ‘thorough’, ‘better’, ‘varied in teaching styles’, ‘adventurous’, ‘attentive to pupils’ and had ‘more pace’. One teacher put it like this:

After 37 years in this job I know the smaller the class the more effective the teaching, whether to whole class, group or individual.
(Year 6 teacher)

In addition to the terms just used, our listing of responses contained the following teaching qualities which were said to be more likely in smaller classes: ‘better quality teaching’, ‘guided work with students’, ‘accessible lessons’, ‘quality time’, ‘ability to listen’, ‘responding to individual pupils more effectively’, ‘pupils focused and engaged’, ‘better pace of teaching’, ‘adventurous teaching’, ‘more thorough teaching’, ‘wider variety of teaching styles’.

Teachers could be rather general in describing or reflecting on their own teaching, with much described in broad terms or implicit. For example, the following comment from a teacher is not untypical:

Mornings have been great – only 20 Yr 6. Felt I have been able to teach! It ensured very good coverage of Literacy and Numeracy in preparation for SATs. Afternoons a nightmare, when 15 Year 5s join us and I have to ‘teach’ all the other curriculum areas. (Year 6 teacher)

Despite the teacher’s emphasis on the word ‘teach’, we are not very clear about what this teacher means by it. In contrast to our data on interactive contexts, we do not have parallel information on teaching quality from systematic observation studies. This suggests further work would need to be done to unpick the qualities of teaching involved.

Nevertheless, as we said in [Chapter 2](#), teachers’ views on their own teaching and the extent to which it is affected by class size are important and were sometimes quite specific. The following responses from teachers provide more detailed comments on how they feel class size affects qualities of their teaching.

Having 22 pupils (instead of 33 – last year) ... it has been easier to detect weak areas within literacy, numeracy and science which could be relevant to whole class, groups, individuals and create target areas for focused teaching. (Year 5 teacher)

This comment suggests that for this teacher one benefit of a smaller class is not only that it allows for more individual and small group work with pupils, but that the teacher is also able to use this experience to target areas for more focused teaching. Once again this suggests that teaching is about monitoring and then building on pupils' contributions, as much as simply delivering a lesson.

The following teacher had a similar view about how a smaller class allowed more 'focused' teaching.

... used to teaching 35 children but on occasions numbers have been reduced by at least 10 + – has meant increased participation + access to resources for those left as well as the age old issues of more room in the class, more focussed work possible. (Year 6 teacher)

The way that teachers felt that a smaller class allows more flexibility to adjust teaching to enhance learning and engagement is one sub-theme.

... has meant I can teach in a more relaxed manner, tuning tasks/ texts etc. to those that I think the group will relate to well and enjoy. (Year 6 teacher)

Another sub-theme was the way a smaller class could allow more adventurous and creative teaching.

A higher number of children ... means you feel less fresh to plan and be imaginative. Less children leaves you with more creative energy. (Year 6 teacher)

Control/management. Another subset of responses from teachers referred to the way that increases in class size meant more demands on discipline, control and classroom management.

Having 22 pupils (instead of 33 – last year) has enabled me to focus on individual problems, and spend more time working 1:1 or 1:2. ... Less time has been spent controlling, organising and disciplining pupils, so better use has been made of teaching time. (Year 5 teacher)

The higher the number of children – the more time is spent controlling the children. (Year 5 teacher)

As one Year 6 teacher puts it succinctly –

Shout too much!

Indeed, as indicated in the teacher responses below, some teachers felt that with larger class sizes they were forced into ‘crowd control’ mode, with adverse consequences for their teaching.

At the beginning of the year I had 24 children – gradually it has crept up to 32. The quality of learning is far easier and effective when you can talk frequently to children on an individual basis rather than exercise crowd control. (Year 4 teacher)

... Often my role becomes more ‘crowd controller’ than ‘teacher’. (Year 6 teacher)

With more time needed for controlling and managing pupils there is less time available for teaching as such.

Noise levels which causes repetition due to listening problems ... Much of lesson time – up to 10 minutes – spent on settling the children down. (Year 4 teacher)

Live feedback. Another feature of teaching, seen by teachers to be affected by class size, is the amount and quality of feedback to pupils. There are two main forms of feedback, first, that given on written work from pupils and, second, that given in real time to pupils, on an ongoing basis. The first type we deal with in [Chapter 7](#) when we deal with the administrative consequences of large class sizes. The second we deal with here because it is a feature of ongoing interactions between teachers and pupils, and as such part of the general heading of ‘interactive qualities’. It overlaps with formative assessment. One might call it live feedback. This, like so much else in teaching, overlaps with and interconnects with other aspects of teaching, not the least individual attention.

Approximately 20 per cent of children have poor concentration and are very easily distracted. Due to the various needs of individual pupils and with such a high number of pupils, its often difficult to support each child at the time they require help. (Year 4 teacher)

The benefit of a small class is that it can allow teachers to do a better job of monitoring and assessing pupils' work at the time they are working on it.

I have 25 children in my class. I think this is the ideal number to have. For English and Maths we set children – so I often end up with even smaller numbers. Having a smaller number in the class makes it easier to get around all the children to check on how they are doing and mark work as they are going along (especially in Maths). Also marking at the end of each day takes less time so more effort can be put into preparation. (Year 6 teacher)

Knowledge of pupils. Another quality of teaching connected to class size, suggested by teachers' accounts, is the way fewer children in the class allow the teacher to get to know individual pupils more thoroughly. Again, this overlaps with, and is connected with, an increase in individual attention. From teachers' point of view, having more individual contact with a child means they can get to know the child better. A similar point is seen in teachers' worries that a large class means that they are not able to make 'connections' with each child and develop relationships with individuals.

Smaller number and so feel able to give a lot more individual attention. I feel I am able to 'listen' to the children more about things other than 'academic'. (Year 5 teacher)

As there are 36 children I do find it hard to spend quality time with individuals. Because of this I don't feel I forge such a good relationship with them. There is less time to set individual targets, to discuss these and their work with them. Groups tend to be large and not as intimate, again I feel this affects my relationship with individuals. (Year 5 teacher)

Class of 36 – greatly weighted to boys too. Sometimes feel that it is difficult to make regular 'connections' to each child. Quiet/shy children manage to remain unnoticed too often. More children seems to mean more of everything: including SEN or behaviour problems etc. Just not enough time to share around. (Year 4 teacher)

The smaller number of children has allowed me to have a chance to 'talk' on a personal footing because I'm not rushed trying to cope with larger numbers. (Year 4 teacher)

The quality and depth of a teacher's knowledge of individual pupils can have a knock-on effect on discipline and control.

I do not feel that I have as close a relationship as I would like as so many children increases the necessity for discipline issues. (Year 5 teacher)

We have taken other results from the TQ, that are relevant to other aspects of teaching, to the relevant chapters in the book, that is, quotations connected to task activities and teaching to [Chapter 7](#), quotations on differentiation to [Chapter 7](#) and [Chapter 9](#), and material on types of pupils in the class to [Chapter 9](#).

Classroom contexts: Physical

The TQ responses from teachers suggest that class size affects teaching through interconnected effects on other factors, which then influence teaching. We pick up on this point at the end of this chapter and in [Chapter 10](#), but here we concentrate on one of the clearest ways the teachers' views show how this is evident – in the way that class size affects the physical context of the classroom, which in turn then affects teaching and learning. The three main physical context categories that emerged were *space*, *resources/materials* and *noise levels*.

Space. There were many comments from teachers about the way that the physical context of space affected a number of aspects of teaching and pupil learning and behaviour. Space available in the classroom is dependent on class size relative to the classroom size of course. Though it is possible for space in the classroom to be independent of the number of children, most obviously when the classroom is very large, and although we did not have an exact measure of classroom size, it is likely that, on average, as class size increases, space tends to decrease. We saw from teachers' comments how much this affects the day to day activities and teaching that takes place. We see that space affects classroom organisation, pupil behaviour, and also affects which pupils a teacher works with and asks to participate.

Large number of children – relatively small classroom – children have to sit in rows – no room to group tables for small group work. So much ‘stuff’ in such a small space. (Year 4 teacher)

Behaviour is more difficult to manage with a large number of children in a small space because it leads to an increase in contact between pupils as they are moving around ... A more crowded classroom means staff are less mobile, also pupils you are most likely to ask to come to the front to contribute to lessons are those that have easy access. Similarly when working with a group space requirements influence which pupil you sit near. (Year 6 teacher)

Here, the teacher feels that class size and space combine to adversely affect the teacher’s ability to support pupils who need her help:

The physical size of the pupils and the size of the classroom means that I have had to teach more from one area of the room, and I’m less able to reach a group that needs my attention/help/intervention. (Year 6 teacher)

The next quotation shows how the large class and the lack of space mean the teacher is forced into whole class sessions leading from the front and problems with conducting group work and managing pupils with behaviour problems.

Much of the teaching had to be done as whole class with me leading session. I have 29 children in a small classroom. Group work is very hard due to lack of space. Also many children with behavioural problems that need to be spaced out around room. (Year 6 teacher)

One teacher shows that the lack of space and the number of pupils means it is hard to set up her preferred spaces for learning:

No extra space for ‘corners’ in the classroom. (Year 6 teacher)

Another indicates that this can also affect the kind of learning activities that are possible:

Having over 30 children in Year 5/Year 6 means that physical space is limited. Opportunities for investigative work & experiments is restricted. (Year 6 teacher)

It is clear from such comments how, although the physical shape and size of the classroom is in a sense a given that can be taken for granted, teachers feel it can have serious consequences for the kind of teaching and learning activities that take place, and these are bound to be exacerbated by increasing numbers of pupils in the classroom. We return to space in the chapter on tasks and the curriculum ([Chapter 7](#)).

Resources/materials. A second feature of the classroom environment – the resources and materials used for teaching – also connects with class size and teaching. There is a connection here between resources/materials and task activities. This is because activities, such as practical and investigative activities, usually depend on materials and apparatus to carry them out. But class size can also affect something as basic as the number of textbooks and the number of computers needed.

Resourcing is also a problem. We tend to buy ½ sets of books so there's never enough to go round. (Year 5 teacher)

In the mornings it has been alright because of the smaller class sizes, but in afternoons when I have all the class there have been behavioural issues and difficulty in teaching ICT due to lack of computers for the size of the class. (Year 5 teacher)

Very rigid regime established with 35 in the class; little time or resources available for the more investigative work, although several sessions are set aside each week for this. Would like to do even more. (Year 5 teacher)

The class is not resourced for 35 children so even with sharing there are not enough books. This means I have to spend longer finding appropriate work in other schemes. (Year 5 teacher)

In the next teacher comment, we see how a large class size can affect access to science equipment and computers, with negative implications for teaching and pupil involvement in the work.

You can't arrange groups in the way that you want because of the lack of space. You can't let as many children handle science equipment because there isn't enough to go round. When we go into the computer suite some children have to go three to a computer instead of two so they have less hands on time. All this leads to the fact that the more able child takes charge and gets on with it whilst

a less able child sits back and doesn't achieve as much. (Year 6 teacher)

We return to class size and resources in [Chapter 8](#).

Noise levels. A few teachers made the point that as the size of class increases so too do the noise levels in the classroom and that this can in turn affect pupils' learning.

I don't think that the quality of my teaching has been affected, but would add that I have a wide range of abilities in this class and it is therefore difficult to teach to all children's levels during whole class teaching sessions. I firmly believe that a calm and quiet classroom aids concentration and therefore learning. 29 children in one room can contribute to high levels of noise, which are further increased by the number of adults in the classroom as they communicate with their groups, therefore affecting the learning rate of the children. (Year 4 teacher)

Effects on teachers

Even though the question asked in the TQ was about effects on teaching, the responses from teachers showed that there could be adverse consequences of large classes for them as well, in terms of feelings of guilt, stress, tiredness, less creative energy and their health.

One teacher with a large class over 30 put it bluntly:

Low morale, considering resigning. (Year 5 teacher)

In the next quotation we see how a large class of 36 has led to feelings of guilt and tiredness for the teacher, as well as financial and medical problems.

Always feel guilty because we don't spend enough time with each child. Additional time taken to mark/write reports adds to tiredness. Constantly projecting my voice has caused loss of voice 3 times this year – have to have voice therapy – personal cost – financial & medical. (Year 4 teacher)

Here is an interesting comment from one teacher who is describing a reduction in the class size from 35 to 30 – still a large class to many.

The start of the year saw a class of 35. This caused problems with resources, furniture and especially marking. Now the class has reduced to 30 we all feel we can 'breathe', the class is comfortable and relaxed. (Year 5 teacher)

It is rather easy to dismiss this effect of class size reduction as trivial but the result of being able to 'breathe' and being 'comfortable and relaxed', though hard to measure, can have a positive impact on teacher's motivation and enthusiasm, and ultimately their teaching.

Results from systematic observation studies (CSPAR and DISS)

So far in this chapter we have looked at the relationships between class size and teaching on the basis of teachers' own experiences. We addressed the way class size is seen to affect the interactive contexts for teaching and the quality of teaching in terms of, for instance, feedback and management.

In this section we look more precisely, but more narrowly, at the relationship between class size and teaching. We do so through the use of a rigorous observation analysis of the moment by moment presence of a few selected aspects of teacher-pupil interaction. This was the same method as used in the last chapter when observing pupils' on- and off-task behaviour. As valuable as teachers' reflections on their own teaching can be, the point of this kind of observation method is that it is designed to be objective and verifiable, and is independent of teachers' own views.

As we said in the last chapter, our view is that systematic observation is a very useful, if limited, method of data collection. One benefit is that it can test and complement data from other forms of data collection; in this chapter we are particularly interested in the extent to which the systematic observation results agree with those from the TQ. We state at the outset of this section that we were surprised by the strength and clarity of the results we found.

In this chapter we draw on the systematic observation components of the CSPAR and DISS studies. As seen in the last chapter, the DISS study carried out systematic observations in four year groups in 27 primary schools and 22 secondary schools. There were 686 pupils observed and 34,420 10-second observations in total. We have seen that the observation component in the CSPAR study involved observations of pupils in Year 6 (10-11 years). There were 257 children in all, 128 girls and 129 boys, 83 low ability, 87 medium ability and 87 high ability, and

there were 22,312 observations in total with an average of 87 observations per child. There were 42 classes in all, 16 small (25 or under) and 26 large (31 and over), chosen on a random basis from class-size information supplied by the school. In some cases the observers found that the registered class size was different to the class size actually present during the time of observation – so we actually used what we call the ‘experienced’ class size in the analysis (See Blatchford et al. 2005 for more details). In this chapter we draw on both studies to look at whether class size affects two important aspects of teacher to pupil and pupil to teacher interaction: first, the amount of individual attention from the teacher experienced by a pupil, and second, the amount of time pupils actively interacted with their teachers.

As in the last chapter, we think it is important to describe the logic behind the construction of these two categories in order to give the reader a clear sense of their meaning and application. The first set of categories in the observation system involved two mutually exclusive categories (that is, only one could be coded in a time interval): ‘focus’ and ‘audience’. ‘Focus’ was coded whenever the child being observed was being addressed specifically by the teacher, whether it was one-to-one, in a group or in the whole class. By contrast, ‘audience’ was coded when the teacher was directing her attention at all the children in the class or group, or another child. The idea was that these two categories should be used to describe every interaction in which the target pupil was engaged with the teacher, that is, nothing could be left out (technically the categories were ‘mutually exclusive’ and ‘exhaustive’).

The second set of behaviours used in this analysis of teacher–pupil interaction comprised four sub-categories describing the type of pupil behaviour to the teacher (so additional to whether they were the focus or audience). These were ‘initiate/begins’, ‘responds’, ‘sustains’, and ‘attend/listen’. ‘Begins’ was coded when the target pupil (the child being observed) initiated an interaction with the teacher, by word or by gesture. ‘Responds’ was coded when the target pupil responded to a new interaction initiated by the adult. ‘Sustains’ was coded if the target pupil and the teacher continued their conversation over the majority of the 10 seconds and the interaction started in a previous time interval. So if the teacher asked a question of the target pupil, we would code ‘responds’ for pupil, but if the teacher then continues with ‘why do you think that?’ and the target replies in the next interval it would be ‘sustains’. These three categories of teacher to pupil behaviour were by definition seen as active pupil behaviour. ‘Attend/listen’, on the other hand, was by definition classified as passive behaviour. This was coded

when the target was attending to what the teacher said for the majority of the 10 seconds (so called ‘predominant activity sampling’). One of these four categories was always coded when the child interacted with the teacher, and, as with focus/audience, the categories within this set were mutually exclusive – only one could be coded.

These two sets of behaviours were coded in both the CSPAR and DISS observation studies. There were several additional behaviours coded. In the CSPAR observation study only, we split the ‘focus’ category into two finer categories for finer discrimination. It was coded separately as ‘short’ – not for the whole 10-second interval, or ‘long’ – the contact continued through the whole 10-second period.

In the DISS study only, there were also two extra categories of teacher to pupil interactions. There was first a category called ‘adult teach’, which denoted times when the teacher talk to pupils was directly concerned with the substantive content of subject knowledge, that is, communicating concepts, facts or ideas by explaining, informing, demonstrating, questioning, suggesting. The second category denoted times when the teacher dealt with negative behaviour. This was coded whenever the teacher had to correct the target child or a group within which the target child belonged. The category would not have included simple academic disagreements over an answer from a pupil, but rather times when the teacher deliberately dealt with a child who was considered to be off-task, behaving inappropriately or misbehaving. A summary of these four observation categories is given in [Box 4.1](#).

The basic logic of the statistical analysis of the DISS observations, as described in the last chapter, was to determine whether there was a relationship between class size and the selected observation categories, controlling for other potentially confounding or overlapping variables. As described in the last chapter, the statistical analysis was particularly powerful because it was based on the co-occurrence of the experienced class size and the presence of a behaviour category for each separate 10-second time interval. Both studies analysed the effect of class size differences, controlling for the effects of the other explanatory factors, using multilevel regression modelling (see Blatchford, Bassett and Brown 2011). As described in the last chapter, the graphs later in this chapter show the probability of a behaviour occurring for any given size of class, for example, to compare the probability of a behaviour occurring in a large class of 30 versus a relatively small class of 15.

Taken together, the two studies probably constitute the most thorough observation study of class size effects on classroom behaviour ever conducted – in total there were nearly 60,000 observation points!

Box 4.1: Summary of observation codes used in DISS and CSPAR studies

1. **The amount of individual attention from the teacher experienced by a pupil** (focus versus audience):
 - ‘Focus’: when the child was being addressed specifically by the teacher, whether it was one-to-one, in a group or in the whole class.
 - ‘Audience’: when the teacher was directing her attention at all the children in the class or another child.
2. **The amount of time pupils actively interacted with their teachers** (Initiate/begins, responds, sustains, attend/listen):
 - ‘Begins’: when the child initiated an interaction with the teacher, by word or by gesture.
 - ‘Responds’: when the pupil responded to a new interaction initiated by the adult.
 - ‘Sustains’: when pupil and the teacher continued their conversation over the majority of the 10 seconds and the interaction started in a previous time interval.
 - ‘Attend/listen’: when the child was attending to what the teacher said for the majority of the 10 seconds.
3. **‘Adult teach’** – teacher talk to pupils directly concerned with the substantive content of subject knowledge; that is, communicating concepts, facts or ideas by explaining, informing, demonstrating, questioning, suggesting.
4. **Teacher deals with negative behaviour** – whenever the teacher had to correct the behaviour of the target child or a group within which the target child belonged – not simple academic disagreements over an answer from a pupil, but when a child was considered to be off-task, behaving inappropriately or misbehaving.

Individual attention and active involvement with teachers

In the CSPAR KS2 study the results showed clear differences between small and large classes (that is, classes of 25 or under versus 31 and over) in the first two categories of teacher–pupil interaction. Two allied behaviours were more common in large classes: first, child to teacher – attend/listen and, second, child is audience. We have seen that the first category – attend/listen – denotes times when the child’s contribution to interactions with the teacher is passive; they are simply listening to her. Child is audience refers to times when they are not the focus of the teacher, that is, they are not singled out by the teacher, either on a

one-to-one basis or in a group or whole class situation. Both therefore describe a passive role in contact with the teacher, and one which is more likely in larger classes. Pupils in large classes are, in other words, one of the crowd.

Conversely, as class size gets smaller there is a greater likelihood of times when the child is the focus of a teacher's attention, and this is evident in terms of both short (under 10 seconds in length) and long (over 10 seconds), as well as the two added together. Moreover, in smaller classes we find that pupils have a more active role in contact with teachers. We see this in the greater likelihood of active forms of behaviour – initiating and responding to teachers and sustained contact with them.

The results from the DISS observation study were exactly in line with those from the KS2 study, even though they were completely different in terms of the schools, age levels and the years the data were collected. The DISS results, moreover, cover four age ranges over primary and secondary stages.

To be more specific, in the DISS study there was a highly significant association between class size at primary level and the pupil being the focus of a teacher's attention. Though 'focus' did not occur very frequently, it noticeably increased as class size decreased. The results are displayed in graphical form in [Figure 4.1](#). Some measure of the effect can be seen by comparing the amount of focus in a class of 30 compared to a class of 15. [Figure 4.1](#) shows the difference to be about 7 per cent versus 3 per cent of all observations, that is, focus was more than halved in a large versus a small class. This is a significant difference.

There were no differences between different levels of pupil attainment in the relationship between class size and the amount of focus, at either primary or secondary. In other words, the relationship between class size and individual attention was found for children of all attainment levels.

The effects of class size and the amount of pupil active interaction with the teacher at primary level are shown in [Figure 4.2](#). There was a significant negative effect of class size and we illustrate the effect by again comparing 30 versus 15 in the class. We see that the difference in the amount of pupil active behaviour to the teacher is 2 per cent versus 6 per cent of all observations. Though 'active' interaction with the teacher is not frequent, there is therefore about three times more in small classes – which is again a very significant difference. There was no statistical interaction with the attainment level of pupils; in other words, the effect was similar for all three attainment groups.

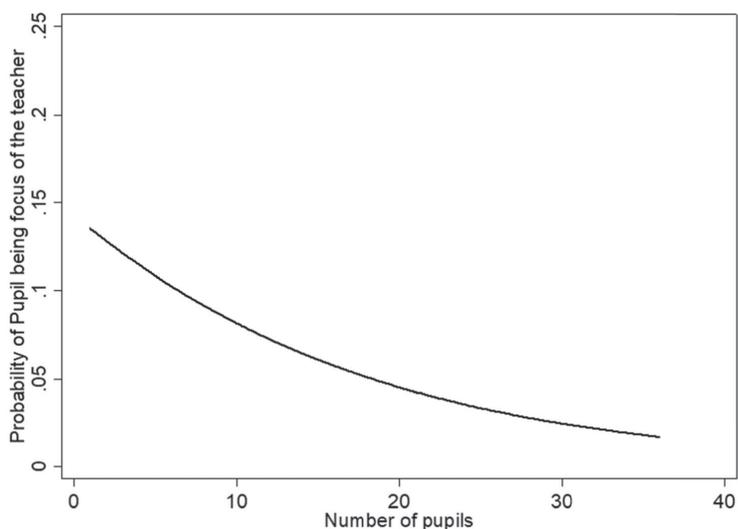


Figure 4.1: Class size and pupil focus of teacher’s attention (primary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier.

There was a similar, statistically significant effect of class size at secondary level.

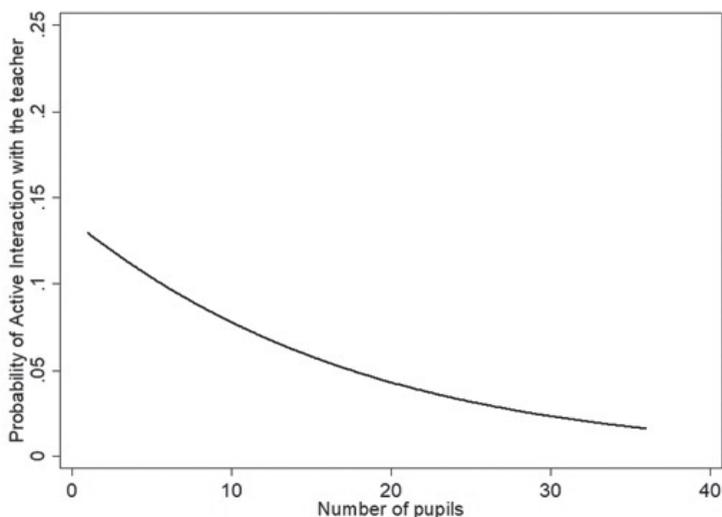


Figure 4.2: Class size and active interactions with the teacher (primary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier.

The result was repeated in secondary schools: there was also a highly significant effect of class size on the amount of active interaction with the teacher. As in primary schools there was also less active interaction with the teacher in larger classes.

The results from the systematic observation study are therefore clear and we think unequivocal: the smaller the class, the more individual attention and the more active a role the child has in interactions with the teacher. This gives further credence to the results from the TQ, presented above. The overwhelming view of teachers, that they can give more individual attention in smaller classes, is supported by the results from the objective systematic observation studies. Results from teacher reports and systematic observations are therefore clear and consistent: individual attention, what we have called one of the three main interactive contexts in the classroom, is very much affected by the size of the class.

The overall amount of teaching

In the DISS observation study we examined the effect of class size on the total amount of teaching talk by the teacher, that is, teacher talk to pupils directly concerned with the substantive content of subject knowledge. This is the third category in [Box 4.1](#). There was more teaching in larger classes in primary schools, although this tailed off for much larger classes. There was no evidence of an interaction between class size and attainment group, which means that in a large class, children of all attainment levels experienced more teaching overall.

There was also a significant effect of class size for secondary schools, and again there was a positive association between class size and the amount of teaching (see [Figure 4.3](#)). Once more using a comparison of 30 versus 15 in the class for illustrative purposes means a difference between 52 per cent and 45 per cent of all observations – that is, in the smaller class there is around 7 per cent less ‘teach’ occurring.

This finding may appear contradictory as it seems that pupils get less individual attention in larger classes but they also receive more of a teacher’s input overall relating to educational matters, and on the face of it this might seem to mean that larger classes advantage pupils. However, the finding is likely to mean that pupils as a whole are receiving more of a teacher’s delivery to the whole class. This is supported by other results from the DISS study, not reported in detail here, which showed that for primary and secondary schools together there was more whole class teaching in larger classes. Results from the KS2 CSPAR study also

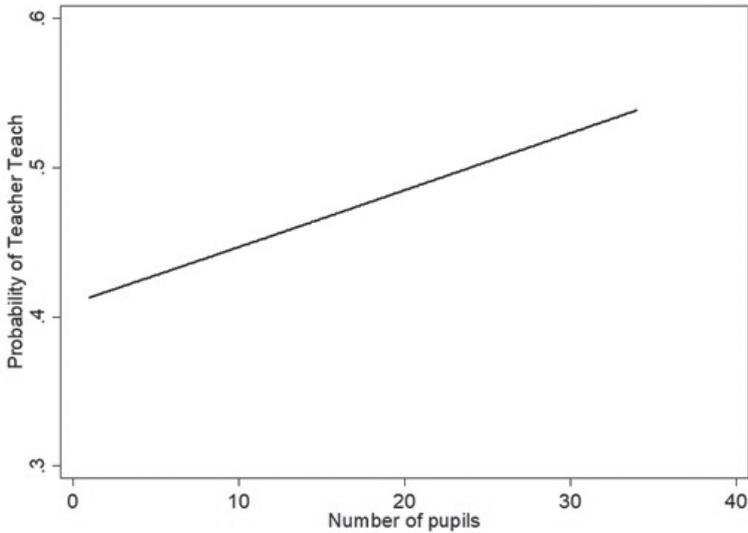


Figure 4.3: Class size and teacher teach (secondary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier.

showed that times when the teacher was addressing the whole class (which could cover all types of contact, including procedure/routine) were more likely in large classes. Putting these two main results together therefore suggests that in smaller classes pupils get more individual attention, while in larger classes they spend more time listening to the teacher talk to the whole class. Another way of expressing this finding is to say that they are perhaps getting more educational input in a larger class, but this is at the expense of it being largely passive and received as part of a large group.

Teacher dealing with negative behaviour

Finally, in the DISS study we looked at the effect of class size on the amount of talk in which a teacher dealt with pupil negative behaviour. In contrast to the results for individual attention, the effect of class size varied for pupils with different attainment.

For primary schools there was significantly more teacher dealing with negative behaviour in larger classes for low- and medium-attaining pupils, but no significant effect for high-attainers. The primary school results are shown in [Figure 4.4](#).

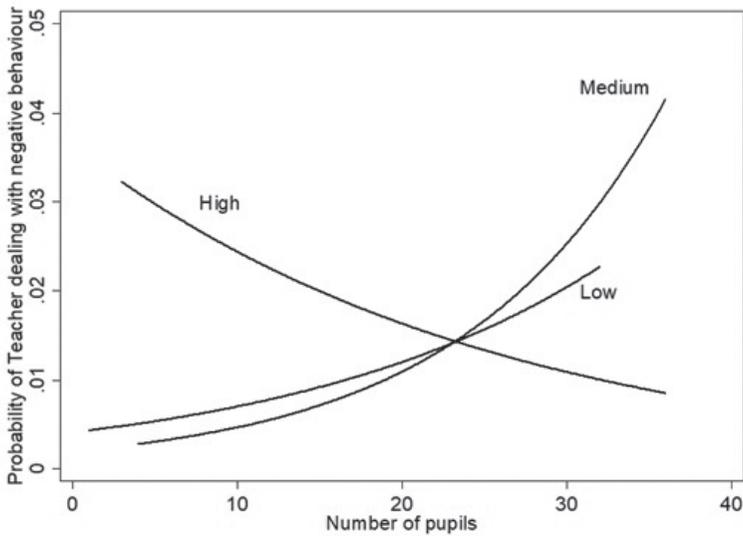


Figure 4.4: Class size and teacher dealing with negative behaviour (primary). First published in Blatchford et al. (2011a). Reproduced with permission from Elsevier.

The results for secondary schools showed that there was significantly less of the teacher dealing with negative behaviour in larger classes for medium-attaining pupils. Conversely, there was evidence that there was more dealing with negative behaviour in large classes for low-attaining pupils, although this result was not quite statistically significant. There was no significant effect for high-attainers.

Summing up results for teachers dealing with negative behaviour shows that as class size increased it is the low-attaining pupils who tend to be criticised more by teachers.

Case studies of small and large classes

As described in [Chapter 2](#), in the CSPAR KS2 study we conducted case studies in a small number of small and large classes when the pupils were in Year 5 (9–10 years) and Year 6 (10–11). They were conducted in 20 classes in all across England, 10 classes in Year 5 and 10 in Year 6, and in both years there were five small (25 pupils or less, average 20) and five large (31 pupils or more, average 33) classes. Classes were selected at random from the list of class sizes for each year.

As mentioned in [Chapter 2](#), the aim of the case studies was to provide a complementary and more detailed portrayal of individual classes, which would provide the basis for a more interpretive and grounded analysis of factors relating to class size differences and adult deployment in classes. Selected aspects of classroom learning and experience, expected to be connected to class size differences, were defined in advance, and the method comprised whole class and selected child observations in terms of event sampling of significant events; semi-structured interviews with teachers, teaching assistants and pupils; end of session/day comments and judgements by the field worker; summative judgements by the field worker, all organised in terms of the main headings. This component made use of experienced teachers as field workers.

Organisation of pupils for teaching

Records were made of time spent in the three main forms of organisation for learning: whole class teaching, individual work, and group work/teaching to the group. The results from this part of the CSPAR study were similar to the systematic observation results presented above. Although classes varied to some extent, the main contexts for learning were whole class teaching and individual work. Whole class teaching was characterised by the teacher talking, more or less without interruption, whilst the pupils sat passively listening. This was more likely in large classes – an average of 158 minutes compared to 126 minutes. The case study visits showed examples of extremely well presented and handled whole class teaching sessions with a clear focus, a high level of pupil engagement, and clear curriculum objectives. These could occur in large and small classes:

The pattern of the work was the same ... with the class teacher introducing the tasks to the whole class and then paired or individual work, based on worksheets and/or shared textbooks. The teacher used the projector to good effect, sometimes projecting the page from the pupils' text/worksheet, and at other times her own material. Pupils interacted with the projector on occasions, either filling in (e.g., coordinates), or telling the teacher what to write. At other times the class read from the text/worksheet and the teacher recorded the main points on the OHP. This approach was versatile and a great aid to focusing the pupils' attention on

the task. There was no ‘talk only’ introduction or teaching. (Field worker notes, large class)

Individual work was also common, even though in most classes the tables were in blocks, with pupils facing one another. This did not seem to vary between large and small classes.

Collaborative group work was rarely observed in the case studies. When it did occur, group work did not appear to be affected by size of class, indicating that it is not being used by teachers in large classes as a way of making more effective use of pupil and teacher time.

Interviews with the pupils indicated that, regardless of class size, most preferred working with small groups rather than on their own, and they shared the same reasons for this preference, mostly to do with the benefits in terms of help from others, but also social reasons. Most pupils preferred small groups to large groups because of the problems they felt could arise in the latter. We return to pupils’ preferences for working arrangements in the chapter on grouping practices ([Chapter 5](#)).

In the case studies, teachers linked the size of group with the amount of time they could give to pupils. Increasing the number of groups was seen as less helpful to pupil progress and also more demanding on the teacher, who would find it increasingly difficult to get round all the groups. Larger groups allow more off-task behaviour to occur and pupils’ needs to be overlooked. This reinforces results from the teacher questionnaires, presented above, and is a topic we again take up in more depth in the next chapter on grouping practices.

The nature of teacher-pupil interactions

During the case study visits, there were main features of teacher-pupil interaction that appeared standard whatever the size of class. Interactions in all classes were almost all brief, seconds rather than minutes, apart from the teacher to whole class interactions, which went on for a very long time, in all but one class. Pupils all used the convention of putting their hands up as the way of requesting help.

But there were other aspects of teaching which did appear to be related to class size. All the teachers in the case study interviews agreed that as the class size increased, the number of interactions with individual pupils decreased. This was in line, as we have seen, with results from the teacher end of year questionnaires (TQs), and the systematic observations. It was also supported by observations conducted for the case

studies. In the small classes, all 15 observed pupils had interactions with their teachers, while in the large classes there were three who did not. It was in a large class that one observed pupil suffered most obvious neglect by the teacher.

Other results from the case studies also complement and support those from the TQ. All teachers and teaching assistants agreed that in larger classes discipline became more difficult and more of an intrusion into the teaching and learning process. Some teachers in both small and large classes also felt that relationships with pupils, particularly the shy ones, suffered as the class became larger. The large class teachers also thought the quality of teaching was adversely affected and teaching assistants agreed with them.

But there were some ways in which teaching did not vary between small and large classes and there were here indications of the way teachers did not always take advantage of the opportunities afforded by having small classes. In one small class, for example, there were unnecessarily long introductions to tasks, combined with loss of focus at times, which contributed to pupil restlessness and teacher interventions to regain control. The pace of work was affected as a consequence and it was the judgement of the field researcher that the high-attainers were not sufficiently challenged for most of the day. With such low numbers, the teacher might have given pupils differentiated work and this would have encouraged more interest and brought out more from pupils. The teacher could have monitored and supported the work in the group contexts more effectively than in the whole class approach which she was using.

Conclusions

In this chapter we have presented results from three detailed methods of data collection – teacher questionnaires, systematic observations and case studies (which involved interviews and observations) – in order to explore how class size and teaching are connected. See the **Key Themes** box opposite for those key themes that emerged across the three methods of data collection, and [Figure 10.1](#) for the complete model of class size effects.

Key Themes

Teaching: Interactive contexts

- Individual
- Group
- Whole class

Teaching: Interactive qualities

- Teaching quality
- Control/management
- Live feedback
- Knowledge of pupils

Classroom contexts: Physical

- Space
- Noise levels
- Resources/materials

Effects on teachers

- Workloads
- Stress
- Tiredness
- Teacher retention

In this concluding section we first identify the key messages about the connection between class size and teaching and then draw out the main pedagogical implications.

Interactive contexts for learning: Summary of findings

Perhaps the single main result to emerge was the way that class size affects the frequency and balance of the three main social contexts for learning: the class, group and the individual. See the **Key Themes** box above, under **Teaching: Interactive contexts**. The clearest result was the way size of class affects one of these contexts in particular: the amount of teacher to pupil individual attention.

Individual attention

There is consistent evidence from the systematic observations, the TQ analyses and the case studies that as class size increases, the amount of individual attention and one-to-one interactions between the teacher and the pupil decreases. The converse also applies: as class size decreases, the amount of individual attention increases. This seems, then, to be a robust and clear result, remembering that the observation results come from two observation studies, the KS2 CSPAR and the DISS studies, which comprise probably the largest ever observational research on class effects, totalling 60,000 observation points.

An allied finding is that the child's role becomes more passive in larger classes, with a tendency to just listen to the teacher while the teacher talks to the whole class or another pupil. Conversely, as class size decreases there is more likelihood the pupil will be more active, initiating and responding to the teacher's talk. Both observation studies found a clear effect at primary level (age 5–11) and, in addition, the DISS study found the effect continued into secondary level (age 11–16).

There was little evidence that the relationship between class size and teacher–pupil interaction varied by pupil attainment. In other words the effect was felt by all children in the class, whatever their level of attainment. Though individual attention and active interactions with the teacher were not frequent overall, a measure of the clarity of the findings can be seen in the case of the DISS results where we found that as a percentage of all observations, there were between two and three times more of these behaviours in smaller classes of 15, compared with in larger classes of 30.

Though the relationship between class size and individual attention seems clear it is also affected by, and needs to be understood in terms of, the teacher's preferred method of teaching. We have seen that for most teachers in the schools studied, their preference is to maximise the amount of individualised attention, that is, to make sure that all children get as much of the teacher's time as possible, and preferably as individuals. The problem with a large class, from their point of view, is that it compromises this preference – they are constantly frustrated that they are not doing as good a job as they would like, and that pupils are suffering.

Whole class teaching

We have seen from the systematic observations and case studies that there is a tendency for more whole class teaching in larger classes, and

that this is one way that teachers adapt to having more pupils in their class. The effect of larger classes on more whole class teaching was also evident in the TQ study, even though it was sometimes implicit in the stress on individual attention; the increase in whole class teaching is the converse of the more commonly expressed effect of class size on the amount of individual attention. This connection between class size and whole class teaching is also supported by other data from the project, not reported in this book. This stemmed from Year 6 (10–11 years) teachers being asked to complete forms in which they estimated time in different teaching contexts in a given teaching day. It was found that time devoted to whole class teaching increased from 43 per cent for the smallest classes ($n = 15$) to 60 per cent in the largest classes ($n = 35$).

It needs to be said that observers witnessed many impressive examples of whole class teaching – they could be extremely well presented and handled, with a clear focus, a high level of pupil engagement and clear curriculum objectives. But teachers themselves, even those who were skilled in whole class teaching, and even, as we saw in the observation results, when the overall amount of teaching as well as whole class teaching goes up in larger classes, seemed dissatisfied with the reliance on this interactive context, and felt that effectiveness in teaching was not expressed in this way. Of course, whole class teaching is a necessary and indeed appropriate interactive context for many topics, but none of the teachers said that whole class teaching is an acceptable alternative to individual support of pupils' learning.

Group interactive context

The effects of class size were also seen to affect a third context for learning in classrooms – groups of pupils. As we saw above, this was not revealed in the frequency of this particular context for learning but through the way a large class means there are restrictions on the time teachers have to teach small groups (even though, like individual attention, this was seen as pedagogically desirable); how group size increases with class size, making teaching and classroom management more difficult; and how the quality of group work and teaching to groups is affected by class size. In different ways, these showed how organising pupils into groups becomes problematic as class size increases.

There are likely to be cultural and country differences here as well. In the UK it is very common for pupils at primary level to be organised into within-class groups. We explore the connection between class size and grouping practices in more depth in [Chapter 5](#).

Interactive contexts for learning: Pedagogical implications

We have then seen that class size affects the balance of the three interactive contexts, with the likelihood of more whole class teaching and less individual attention in large classes. A recurring theme of this chapter has been the value teachers attach to individualisation of instruction, and the way this is compromised by large classes. Rather controversially, perhaps, we query seeing the benefits of smaller classes only in terms of increased opportunities for individualised teaching. Although the TQ results showed that teachers prefer to have more opportunities for individual attention and individual support for children, especially those who are struggling, and though the aim is commendable and the strategy understandable, one might ask whether this is always the best use of their time? We think it is worth asking how best to use time across the interactive contexts. It is worth asking if there are other solutions that might help teachers, especially those with large classes, and better serve pupil learning.

Our systematic observation studies showed that even in smaller classes there is little individual instruction in KS2; whole class teaching and individual work dominate. One solution is to rethink and make more strategic use of the other, third context for learning. If individual attention and whole class size teaching are problematic as a solution to large classes and differentiation, then perhaps it would be helpful to think strategically about teaching to and in groups. We develop this more fully in the next chapters, but here we identify two expressions of such an approach, namely, teachers could first rethink how they teach groups and, second, also use collaborative approaches more. We now say a few words on each of these strategies.

One way that teachers could seek to maximise individualisation and differentiation is by teaching to small groups. Although pupils were often seated in groups, there was little evidence of a systematic teaching approach to groups. This could have the benefits of interactive whole class teaching, with attention to the interactive qualities we looked at above, and return to below, but would be potentially more focused and better differentiated in terms of pupil ability. It is also in groups where one might seek to maximise the effectiveness of individual attention. It would also help teachers lucky enough to have small classes: as Betts and Shkolnik (1999) found, teachers could make better use of small classes if they did not reduce group instruction. We return to this point in [Chapter 10](#).

With regard to the second way of utilising groups, we stress here the value in collaborative approaches, that is, pupils learning together with a deliberate attempt to minimise the teacher's input and where pupils have more control over the learning that takes place. We develop this line of reasoning in the next chapter and [Chapter 10](#). The promise is that it has benefits for pupil learning and can also help the teacher, especially those with large numbers of pupils, in terms of maximising the teacher's time with other pupils, and encouraging independence in learning.

Teaching: Interactive qualities – summary of findings

The next part of the summary model in the **Key Themes** box, **Teaching: Interactive qualities**, describes the nature of the teaching that takes place in the three interactive contexts. We have seen how teachers felt that with smaller classes there is a higher quality of teaching. Teaching is more: in depth, higher quality, effective, thorough, better, varied in teaching styles, pace, adventurous and attentive to pupils. These are characteristics that many would argue are features of more interesting and cognitively challenging teaching, which in turn will lead to deeper forms of learning and conceptual understanding.

Sceptics about smaller classes will no doubt query the validity of these comments. They will rightly point to the fact we do not have observation results on these qualitative features of teaching (this would be very difficult to set up – systematic observation methods are not well suited to addressing more qualitative, high inference and probably low frequency categories of behaviours). Of course we need to be cautious about using personal commentaries as hard evidence, but we should also consider the point that teachers necessarily have privileged access to their own teaching, and may be aware of the consequences of class size in ways that much research and policy commentary does not begin to touch on.

As we saw above, the three particular features of teaching, cited by teachers when considering the effect of class size were control/management, live feedback and knowledge of pupils.

Classroom control/management/organisation

In some ways, classroom control is the single most important part of the teacher's job. It doesn't matter how good the content and approach of a lesson might be if pupils do not attend or engage with it. We have seen

examples in large classes where the teacher has excellent control. Some teachers may have the kind of personality that demands attention, some might work hard at developing control using methods learned from their training and from colleagues in their school. We have been privileged to have sat in assemblies led by one talented teacher where 100-plus pupils listened to a story or a point being made, as if mesmerised. Conversely, we have also sat in lessons, sometimes with small classes, where even with the best of intentions a teacher has not managed to get pupils to attend. It can be just a few pupils who are badly behaved or not listening, but at its worse the lesson can degenerate into a trial of strength that wears everyone out.

However, a key point from this chapter is that, other things being equal, when comparing two teachers with similar levels of expertise, classroom control, and school ethos, etc., class size does make a difference. A subset of responses from teachers was about how as class size increased there was more attention required to discipline, control and classroom management. Teachers described how they were forced into crowd control mode with adverse consequences on their overall teaching. Findings from the DISS systematic observation study showed that there was a consistent trend across both primary and secondary education stages for low-attaining pupils to receive more critical comments from teachers in larger classes.

Live feedback

Another feature of teaching seen by teachers to be affected by class size is the amount and quality of 'live' feedback to pupils, that is, feedback on pupils' work that takes place live, in real time. We made the point that this, like so much else in teaching, overlaps with and interconnects with other aspects of teaching, not least individual attention. According to the reports of teachers, one benefit of a small class is that it allows teachers to do a better job of monitoring and assessing pupils' work at the time they are working on it. There is much evidence that this is a more effective method, for example, in comparison with comments on work after its completion.

Knowledge of pupils

Another quality of teaching connected to class size, seen in teachers' accounts in this chapter, is the way fewer children in the class allow the

teacher to get to know each pupil more thoroughly. Logic suggests it will be easier to get to know more about individual pupils in smaller classes and we showed above that this was what teachers felt as well. Knowing children better is likely to mean that teachers have deeper relationships or ‘connections’ with pupils, which from the teacher’s perspective aids teaching. The quality and depth of a teacher’s knowledge of individual pupils is both difficult to measure and easy to take for granted, but can be important to the quality of teaching, perhaps particularly at primary level, not least because it can have a knock-on effect on discipline and control.

Of course, teacher–pupil relationships are to a degree independent of class size. But given that teachers say they know more about individual children in smaller classes and that knowledge of a child is a contributor to having a good relationship with them, it seems plausible that smaller class sizes may help facilitate good quality relationships between teachers and pupils.

Live feedback and class size: Pedagogical implications

At the heart of the problem about providing live feedback in large classes is individual attention, as already discussed. In a situation where the teacher faces a large class, perhaps of over 30, the management of the rest of the children while attending to the assessment of the individual pupil or small group is problematic. It is worth considering whether there are alternative ways of managing feedback and live assessment. During the writing of this book the authors visited a primary school in Oxfordshire, England where live feedback was done in a large class of 34 with groups of four and where assessment was based on teacher and peer judgements about the work on specified criteria. It was school policy for no marking to be taken home by teachers, an interesting approach that prioritised the value of immediate and formative rather than delayed feedback, with the added value of peer involvement in feedback. The school has been complimented for this work, and the authors would concur with this. It must also be said that it worked because of the relationship the teacher had with the children, the wonderful calm of the whole school, the support of the headteacher and the careful use of an experienced TA who took charge of and monitored the rest of the class as they finished off work while the teacher handled the feedback.

Classroom contexts: Physical – summary of findings

The **Key Themes** box, **Classroom contexts: Physical**, summarises the physical features of the classroom – space, resources/materials and noise levels. Comments from teachers showed how space in the classroom affected a number of aspects of teaching and pupil learning and behaviour. Space tends to decrease as class size increases, and we saw from teachers' comments how this affects teaching approaches (for example, a large class and lack of space mean a teacher is forced into whole class sessions and leading from the front). It also affects classroom organisation, pupil behaviour, problems with conducting group work and managing pupils with behaviour problems.

Class size can in addition affect the resources and materials used for teaching. For example, a large class size can affect access to science equipment and computers, with negative implications for teaching and pupil involvement in the work. Noise levels also tend to increase with the size of class, and this can have negative implications for learning.

We come back to issues of space and resources in [Chapter 8](#) and again in [Chapter 10](#).

Effects of class size on the teacher

We saw one final consequence of large class sizes, revealed in the TQ and case study results: the cost to teachers themselves, in terms of feelings of guilt, stress, tiredness, less creative energy and their health. This is summarised in the **Key Themes** box, **Effects on teachers**. We need to be cautious about assuming a causal link between class size and teacher stress and satisfaction – many aspects no doubt feed into a teacher's feelings on teaching. Nonetheless, the strong statements from teachers, seen in this chapter, suggest that large classes can have very real and negative consequences for how teachers feel about their job.

There is a way that effects on teachers' attitudes about teaching might also help account for a lack of clear effect on academic attainment results. Teachers' comments suggest they can, in a sense, compensate for the effect of larger classes by taking the strain of the increased demands in terms of classroom organisation, planning, marking, etc. They do this by working that much harder to help individuals, for example, by giving further support during breaktimes. Although largely invisible, in the end teachers can pay the cost personally, and the profession pays the cost through teachers burning out and leaving the profession. As Berliner and

Glass (2014) have said, the problem of large class sizes may in the end come down to teacher workload.

Interconnectedness

We end this chapter with a general but key point. We started our description of the TQ results with a few longer quotations from teachers, to help convey something of the interconnected ways in which class size has effects on, and implications for, teaching. The teachers' comments revealed how study of the connection between class size and teaching necessarily involves an analysis of the interconnectedness of a number of factors, rather than in terms of a single line of influence. We saw the interconnections between a large class size, having a crowded classroom, and negative implications for focused work, pupil concentration, support for pupils, and emotional and health costs for the teacher. We saw how a teacher's task is made more difficult with a large class in terms of problems for marking, support for reading, setting up practical tasks and investigative work, pupil relationships with each other, support for children with SEND, the balance of individual support versus whole class teaching, problems of differentiating work, and stress for the teacher. The quotations showed that a large class can adversely affect the quality of teaching and the social context within which teachers teach, so there is less individual support and more teaching to larger groups, with accompanying loss of concentration and problems with classroom management.

We have already noted in this book our view of the limitations of an approach to class size which only considers the connection between class size and pupil attainment. In this chapter we have gained what we think are valuable insights into how class size is interconnected with a number of facets of teaching defined broadly. We feel this helps to extend the theoretical accounts of teaching given at the beginning of this chapter. We need to add a classroom contextual perspective, in order to capture the many ways that we have seen class size and teaching interconnect. In a phrase, we feel an additional social pedagogical approach to classroom learning is needed; we return to this theme throughout the book and draw it out more explicitly in [Chapter 10](#).

Solving CSC2?

The essence of class size conundrum 2 (CSC2) is 'why are effects of class size not more marked?' In this chapter we have, we feel, begun to develop

an answer to this question. A key insight we derive from the research is that teachers employ complex adaptations, whether consciously or not, to the number of children in their classroom, and this means that the effects of class size are never fixed. The effect of class size, in other words, depends on a network of classroom organisational and interactive compensations made by the teacher. From this point of view there is not a *necessary* impact of class size on attainment; rather, it all depends on how the teacher manages large and small classes. We have seen in this chapter how teachers faced with large classes can compensate, for example, by spending their own time helping individuals, at some cost to their own well-being. And yet, as we have also seen, teachers in smaller classes may not always take advantage of the opportunities afforded. So this might help account for CSC2, that is, teachers mitigate the potential effects of class size and thereby make them less marked. And this might account for why the effects of class size on teaching are not obviously affecting pupil attainments.

We return to CSC2 throughout this book and sum up our thoughts in [Chapter 11](#).

In the following chapters we develop a better understanding of other classroom processes and then, in [Chapter 10](#), sum up what we know about the overall interconnectedness of class size effects. But in the following chapter we turn to the next classroom process connected to class size: grouping practices.

5

Class size and classroom processes: Grouping practices and classroom management

Introduction

In the last chapter we made an extensive examination of teaching processes related to class size. In this chapter we further develop one aspect of our analysis of class size and classroom processes, examining the connections between class size, within-class groupings and classroom management.

We have seen that almost all the research and commentary on class size has been about associations with pupils' academic outcomes. We have argued that class size is unlikely to affect pupil outcomes directly but is more likely to be mediated through a number of interconnected classroom processes. Unfortunately, as we have seen, dedicated research on mediating classroom processes is still relatively limited. Having this information is important, however, because without it there are difficulties in explaining effects on pupils' academic performance. 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.

Class size and within-class 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; Kyriacou 2009; Muijs and

Reynolds 2011). But teachers in classrooms do not meet pupils individually, out of context, because they (and pupils of course) will necessarily need to adapt to the classroom context. This book is about one feature of the classroom context – the number of children in the class. But another important feature of classrooms that often gets overlooked is the way that, in many Western primary schools at least, pupils are often organised into separate groups seated around a set of desks or tables. This chapter addresses the connections between these two contextual features of classrooms: class size and within-class groupings.

There is an academic tradition in educational research which conceptualises educational processes taking place in hierarchically organised contexts. Bronfenbrenner's (1979) ecological approach is often credited with originating the basic idea, though his model needs to be developed. The school can be positioned as a feature in Bronfenbrenner's model – at the 'micro-system' level – but there are nested and smaller contexts within this level, especially the classroom, which have distinct sets of relationships, rules and dynamics. Of relevance to this chapter is the additional way that contexts are nested *within* classrooms, as in the case of within-class groupings. An early conception of the immediate within-class environment as a factor in everyday behaviour was the ecological psychology of Barker and colleagues (Barker 1968; Barker and Gump 1964; Heft 2001, 2018; Kounin and Gump 1974). When applied to classrooms, the basic idea is that different within-classroom contexts have forces or 'signals' different to other contexts, which pull events and participants along with them (Kounin and Gump 1974). We looked in more detail at this tradition in [Chapter 2](#).

Typically, in Britain, primary school classrooms are organised into groups. 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 et al. 1992), and there have been strong Government-backed recommendations (for example, Muijs and Reynolds 2011) that teachers adopt interactive and knowledge-based whole class teaching methods.

There is, though, a big difference between organising the classroom into groups – as many teachers do – and then using this arrangement deliberately in service of teaching. In Britain there is something of a paradox in that although organising classes into groups is common, this has not been accompanied by a well-developed pedagogy regarding the teaching of such groups (Alexander 1992) – a point to which we

return at the end of this chapter. Studies have shown, for example, that although pupils sit with other pupils in groups they do not work together as a group – instead, they interact with the teacher or work individually. Many have found that collaborative group work is not common in UK schools (Galton et al. 1999; Kutnick and Blatchford 2014; Pollard et al. 1994), even though the literature on cooperative and collaborative group work paints a positive picture in terms of pupil attainment and levels of classroom engagement (Hattie 2009; Johnson and Johnson 1987; Slavin 1990).

Surveys by Galton et al. (1999) and Pollard et al. (1994) have shown the popularity, going back many years, of organising within-class groups on the basis of pupils' 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 et al. 2003), showed that pupils of all ages, even in the reception year (4–5 years), were most likely to be in similar ability groupings. Just as with the number of pupils overall, these groupings are a main context, within classrooms, for teaching and learning.

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 et al. (1996) found, on the basis of their meta-analysis of within-class grouping studies, that smaller group sizes were optimal for students' learning, while larger groups of 6 to 10 members were less effective. The connection between class size and within-class groupings was examined in an earlier article using CSPAR KS1 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 three groups, while large classes approached six groups.¹

Classroom management

But even if we 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 within-class groupings, and in what ways this is affected by the overall size of the class. There is a separate research literature on

classroom management (for example, Evertson and Weinstein 2011) 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.

We saw in the last chapter that, in response to a general question on teaching practices, teachers referred to the connection between teaching and groupings in the classroom. In this chapter we go further and analyse data that is more directly designed to explore 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, for instance, 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.

In this chapter we ask, first, exactly how teachers organise children into groups (in relation to ability, age, friendships, compatibility between children) and how adult support is deployed. Second, we ask how grouping practices have been affected by the size of class, for example, 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 and issues, and the presence of adults.

Results on class size and classroom management

As we saw in [Chapter 2](#), the overall CSPAR study tracked children from 5 to 11 years in relation to class size and researched in a systematic way the relationships between class size and classroom processes. The multimethod approach included systematic classroom observations, and practitioners' and pupils' experiences through questionnaires and case studies. There were no observation results relevant to the topic of this chapter and so we concentrate instead on data from these last two forms of data collection. As we said in connection with our data on class size and teaching, while there are inevitable issues relating to subjectivity and potential bias when using teachers' experiences and views, we feel that engaging with teachers themselves is necessary to get insights into their decisions about classroom management, and how these were in their experience connected to class size and within-class groups. In

particular, we draw on two forms of data collection: questions in the annually administered teachers' questionnaire (TQ) at Years 4, 5 and 6 (when pupils were 8–9, 9–10 and 10–11 years old, respectively) and questions about grouping practices asked in the interviews with teachers and pupils as part of the detailed case studies.

Teacher questionnaires. As described in [Chapter 1](#), there were 486 questionnaires returned altogether; 206 in Year 4, 184 in Year 5 and 96 in Year 6. In this chapter we use answers to two questions. First, at Year 5 and 6 this 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 (for example, in terms of ability, age, friendship, compatibility) with particular reference to size of class.' Second, at Year 4, a 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?' This 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 these two questions were open ended. All the responses to the question in each year were typed 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 was subsequently used for all data analysis.

Teacher questionnaires: How teachers organised groups of children in their classes

The methods used by teachers in Year 5 and Year 6 to organise groups of pupils were calculated. More than one code could be applied to cover a teacher's response, for example, because they allocated children to groups at different times on the basis of both ability and friendship. The number of codes therefore exceeded the number of teachers (80 in Year 5 and 107 in Year 6 – not all teachers returned questionnaires).

The results showed two things. The first is the prevalence of organising children into groups on the basis of 'ability'. At Year 5 this was 70 per cent and at Year 6 it was 84 per cent.

The second feature of the results is the wide range of strategies teachers used overall. At various times, teachers allocated pupils into groups on the basis of mixed ability only ($n = 7$, 5 per cent of all

occurrences), friendship ($n = 14$, 21 per cent), the compatibility of pupils ($n = 10$, 10 per cent), to separate pupils with behaviour problems ($n = 6$, 5 per cent), as well as age/year group and gender. So, despite the prevalence of ability grouping, there is also evidence of a complex set of decisions about the composition of groups in the class.

Teacher questionnaires: How have grouping practices been affected by size of class

The most obvious general trend to emerge from the second question asked of Year 4 teachers in the TQ 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 five codes: classroom management, teaching methods, characteristics of the pupils, use of TAs and other adults, and space and resources.

1. Classroom management

This was the most frequent response from teachers, with 63 out of the total of 89 (71 per cent). 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 quotations express the connection between class size, groups and classroom management for teachers with large classes. (As said in the last chapter, these comments taken from the TQ are from teachers with either a large class of 30 or over or a smaller class of 25 or less, and so in this chapter we do not give exact class sizes.)

I can only teach effectively with a maximum of 4 groups therefore the size of 3×8 and 1×9 is unmanageable for effective teaching and learning. A group of 6 is ideal.

Have had to have 6 guided reading groups instead of 5. Children have had to share textbooks for most subjects. During carpet

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

In the teacher comments quoted above, class size is seen to affect 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 quotation shows the complex interconnected management problems that result from large class sizes and a desire to organise the class into homogeneous (by attainment) groups.

Too many children in some groups arranged by ability, for example 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!

In contrast, 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.

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.

2. Teaching methods

In the second category of response (18/89 = 20 per cent) 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:

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

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

And the converse applies with larger classes:

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.

As we saw in the last chapter, for many teachers a key feature of effective teaching is appropriately differentiating teaching for pupils with different attainment levels and needs; it is frustrating for teachers when large class sizes make this more difficult. Here, the benefit of a very small class of only 12 pupils for differentiation is recognised:

Able to allow more group work and differentiate easier.

Another subcategory of responses showed how larger classes and groups can make the management of practical activities and tasks more difficult.

I have had to abandon literacy carousel because of such a large class size for English (34 pupils). 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. Characteristics of pupils

Responses here (20/89 = 22 per cent) indicated that relationships between class size, groupings and classroom management were, according to teachers, also affected by the characteristics of the pupils in the class. Usually it was that a larger class size resulted in larger groups of low-attaining pupils or those with SEND and behaviour difficulties, who need more support. The next two comments are from teachers with 35 in their classes.

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.

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 can mean it is more difficult to compose groups to benefit teaching and management, for example, when wanting to separate pupils with behaviour problems.

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

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

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

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.

4. Use of TAs and other adults

Another category of responses (13/89 = 15 per cent) concerned the role of teaching assistants (TAs) 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 – for example, practical activities – are only likely to be conducted when TAs are present.

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.

... 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 comment that TAs are not always able to cope with the demands of teaching a group:

My 6 Low Attaining group are 'too much' for the TA – therefore have to be sent one or two at a time on occasions so not all benefit from her input.

We say more about the use of TAs in [Chapter 9](#).

5. Space

Responses on space ($13/89 = 15$ per cent) and resources ($11/89 = 12$ per cent) indicate that 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 textbooks and computers, with pupils more likely to share, and pressure on space in the classroom.

The next responses indicate the sheer physical problems resulting from large class sizes and how the layout of the room in tables can adversely affect classroom management and movement around the classroom. The first teacher has 35 and the second teacher 32 in their class.

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.

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.

The following comment indicates how a smaller class has allowed more space between groups.

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

Case studies

For a sub-sample of schools, data were also collected from the case studies of small and large classes in Years 5 and 6 (9–10 and 10–11 years) (see [Chapter 2](#)). These aimed to provide a more detailed portrayal of individual classes, and they allow a more interpretive and grounded analysis of factors related to size of class and the deployment of TAs. In total, 10 case studies were carried out in Year 5 and 10 case studies in Year 6. In each year, five classes had 25 pupils or fewer ('small') and five were 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 with teachers and pupils followed schedules of questions organised under headings prepared previously, and the conversations were audio-recorded for later transcription. In this section we concentrate on the case studies of large classes.

The interviews with teachers in large classes at Year 5 and Year 6 showed that they felt larger groups, themselves the consequence of large class sizes, had negative effects on teachers and on pupils. In line with the results from the previous chapter, teachers linked this negative effect of large classes 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 that it is of lower quality, and the groups are more difficult to teach. The alternative consequence of a large class, namely an increase in the number of groups, was felt to have a negative impact, with all teachers agreeing that it is difficult for teachers to get around all the groups. Here are some indicative quotations from Year 5 and Year 6 teachers, taken verbatim from the interviews.

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, for example PE, lots of small groups is ideal, but in core subjects, a nightmare, everything is decreased.

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. (Year 5 large class, teacher interview)

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.

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. (Year 6 large class, teacher interview)

Pupil interviews

In the case studies only a small sample of pupils were interviewed and so results need to be treated cautiously. However, the selection of pupils in each class was designed so they were representative, and the pupil interviews at Years 5 and 6 were consistent in showing a general preference for working with other pupils and working in smaller groups.

Interviews with pupils in Year 5 large classes showed that 10 pupils reported 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' as one advantage of a larger group, cited by one pupil, is offset by the perceived higher probability of arguments and inability to agree on what to do.

Interviews with pupils in Year 6 large classes showed that although three-quarters (73 per cent) 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 per cent saying this is what they do most of the time, but 73 per cent 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 responses), 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 extracts from pupils' comments.

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.

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

(Year 5 pupil interviews)

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.

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.

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.

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.

(Year 6 pupil interviews)

Conclusions

Key Themes

- Grouping practices and classroom management

Groups, classroom management and teaching

In this chapter we have used our detailed analysis of teacher-completed questionnaires and interviews with teachers and pupils as part of case studies in schools to explore the complex ways in which class size affects classroom groupings and classroom management. As discussed elsewhere, the reliance on predominantly practitioner views limits the strength of the conclusions that can be drawn, although we have also discussed elsewhere the value of evidence from those most familiar with their own classrooms and pupils.

In this chapter we saw the prevalence of organising children into groups on the basis of 'ability' but also evidence of a complex set of decisions about the composition of groups in the class. We also saw

that, quite apart from the obvious way that class size affects grouping practices through its effect on the size and the number of groups in the class, class size affects within-class grouping practices in terms of classroom management, teaching methods, characteristics of the pupils, use of TAs and other adults, and space and resources.

Case study interviews with teachers in large classes at Years 5 and 6 showed that larger groups, which were the consequence of large class sizes, were seen to have negative effects in terms of the amount of individual attention from the teacher, reduced differentiation of work and the quantity and quality of work. Interviews with pupils in large classes showed a preference for working in smaller groups, less possible in larger classes.

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

The results and views of teachers suggest to us that to understand class size effects, in relation to grouping practices, we need to be aware of the relationship between several separable categories of factors:

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

From this perspective, in order to develop a realistic understanding of class size effects we need a view of classroom effects on learning that seeks to capture the interconnected nature of the contextual, interactive, interpersonal and other features just listed. As we have said, 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. This classroom management facet of the reality of large classes can get lost in the debate on class size effects, yet the way that teachers manage groups in the class is a key factor when considering effects of class size on educational outcomes.

The accounts from teachers show the strain a large class can cause them, and which seems likely to adversely affect the quality of teaching and the quality of work produced. We also saw this in the last chapter. Better understanding of 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 size and pupil outcomes.

We have seen that Blatchford et al. (2003d) used the term ‘social pedagogy’ to help show how learning in schools is not simply the result of teachers exerting an influence on students 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 extended by Kutnick and Blatchford (2014) and our aim here is to develop the idea still further. We return throughout the book to the social pedagogy idea and summarise some main points in [Chapter 10](#).

Class size and within-class groupings: Pedagogical implications

As we saw in the last chapter there are three main options when it comes to organising the class into groups for learning: in terms of individual students, with individual work and individual support; second, as a class for whole class teaching, that is, treating all the class as one group; or into smaller within-class groups.

We examined the first two contexts in the last chapter. We saw that 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, but which 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, we saw that whole class teaching 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 England, there are often wide differences in attainment levels within a class.

In light of what we have learned in this chapter, we now turn to the third option: teaching in relation to within-class groups. There seem to us two key issues here. One 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 pupils spent most time either 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 this makes it easier for teachers to provide explanations and support. As we said in the last chapter we 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.

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 Year 4 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). This 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 more could be done to use groupings strategically as the context for collaborative group work. In the SPRinG study (Kutnick and Blatchford

2014), a number of ‘resistances’ to high-quality group work were found and teachers and pupils often found group work hard and not very productive. As we have explained in other chapters, to deal with this, 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 et al. 2017). The programme was found to have a clear impact on academic progress in science, English and maths across KS1–2 and also on productive interactions between pupils. There were also benefits for classroom management in terms of pupils becoming more independent and freeing teachers up for more productive monitoring activities.

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 adopted 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. It seems from the evidence in this chapter that a large class size exacerbates this mismatch and the dilemmas it presents for teachers. Alexander’s call for an ‘urgent ... look at the justifications, dynamics and effectiveness of grouping’ (68) still seems current. Developing a strategic approach to teaching groups and to collaborative learning in groups are not only important in their own right, but they are also ways in which teachers can help deal with the management problems we have seen resulting from large classes.

In the next chapter we turn to another aspect of classroom life that we feel gets too little attention – interactions and relationships between pupils within the class.

Note

- 1 There is another form of grouping within schools. This involves allocation of pupils to whole classes on the basis of academic ‘ability’ or attainment. It was once common in Britain for pupils to be allocated to classes for all subjects in this way (called ‘streaming’ in the UK and ‘tracking’ in the United States) but now the most common method in the UK is where pupils are allocated to classes on the basis of attainment for specific subjects, usually maths, English and science. It is usually in the UK called ‘setting’. In this book we recognise and document setting where it occurs and in relation to within-class groups but we do not discuss the class-level allocation issues in any detail.

6

Class size and classroom processes: Peer relations

Introduction

Our focus in this chapter is the world of peer relations and the ways in which it is affected by the classroom contextual feature of class size.

As we saw in [Chapter 1](#), the classroom is an interesting and, in a sense, rather unusual environment in that it often comprises one adult – the teacher – and a large number of children. From the pupils' point of view, they will typically spend more time with their classmates than with the teacher or other adults. It is interesting that we rather take for granted perhaps this most obvious feature of the classroom environment.

Though teachers may be aware of the importance of the relationships between children in their class, researchers have unfortunately paid relatively little attention to this aspect of classroom life, and peer relations in classrooms are not well understood. Nuthall (2007) showed that there is a semi-private world of peer relations that runs in parallel to and largely invisible to the more public world of coverage of the curriculum, learning and assessment. This is one reason why, as Christine Howe (2010) points out, the rich potential for a 'cooperative' mode, in which children collaborate and learn from each other, is underdeveloped as a pedagogical strategy. Joyce Levy Epstein (1983) went even further and suggested that the way schools approach peer relationships and friendships is one of 'suppression'. This might seem rather extreme but even casual observations in classrooms shows that a lot of lesson time is spent making sure that children behave responsibly, and a good deal of

a teacher's time is spent in classroom management of pupil groups and friendships to help with this process.

There is a strong tradition of work in psychology which argues that peer relations have particular value for social and even cognitive development. Some years ago, in a ground breaking book, Youniss (1980) adapted the theories of Piaget and Sullivan to show how peer relations were important in their own right and differed from adult-child relations by showing equality, cooperation, reciprocity and mutuality – all of which make a contribution to social development. One theory of socialisation went further and downplayed the role of parents and other adults in favour of a more important role for the peer group in development (Harris 1995). Much recent developmental psychological research on peer relations agrees about the importance of peer relations though also paints a negative picture, stressing the difficulties experienced through rejection, bullying, victimisation and withdrawal.

There are now a number of general reviews of developmental psychological research on peer relations (for example, Bukowski et al. 1996; Dunn 2004; Gifford-Smith and Brownell 2003; Ladd 2005; Rubin et al. 2013; Rubin et al. 2006; Rubin et al. 2005). They tend to discuss research on peer relations in terms of three main aspects: (1) Social status, in terms of, for example, terms like popularity, rejection, social impact; (2) friendships in terms of, for example, their number and quality; and (3) social networks in terms of cliques and other subgroups, and the centrality of individuals and groups in the network. Much of the research on peer relations has examined associations between measures of peer relations such as social status and friendships on the one hand, and aspects of social and academic development on the other. It generally finds that children who are rejected tend to have poorer social and academic outcomes; some researchers have also found longer-term consequences in terms of mental health and criminality (Parker and Asher 1987).

Taken together, this field represents an impressive body of work. However, it has been pointed out that there has been relatively little attention paid to the everyday interactions and relationships within school contexts *through which* these psychological constructs are presumably enacted, and which most directly influence children (for example, Rydell Altermatt 2012).

Social psychologists have had a lot of interest in group processes and group structures (Baron and Kerr 2003; Brown 2000), which has relevance for peer relations. Some of the early pioneering work in social psychology by Lewin, Deutsch, Bales and many others (see for example

the review by Brown (2000) was concerned with group processes. In his review, Brown discusses several underpinning group processes: interdependence, the development of norms, cohesion and social structures, including leadership. However, this interest in social psychology has tended not to be applied to schools and classrooms, even though a classroom of students and adults can, at a basic level, be seen as a group, and therefore social psychological insights and approaches are applicable. We return to this point below.

Peer relations in schools

So what about peer relations in schools? Reviews of peer relations in schools by Blatchford and Baines (2010) and Blatchford et al. (2016a) show how easy it is to underestimate just how important are relationships with friends and classmates for children of all ages. We know from surveys of pupils' views that they feel that the best thing about school is being with friends; Blatchford et al. (2016a) show that they have an important 'socialisation function', that is, children learn important social skills during interactions with peers, relevant to adult life (Sluckin 1981), and these are not acquired through formal instruction. Hartup (1989, in 1992) has described the peer group as an important 'cooperative socialization context', in which children learn about cooperation, reciprocity, effective conflict management, intimacy etc. And Maxwell has said:

The peer group provides arguably the most efficient and highly motivating context for the learning and development of social skills which will ultimately enable children to live effectively as a member of adult society. (1990, 171)

Peer relations can also help with adjustment to school by helping with stressful events (Ladd et al. 1996), helping with life after school transition (Hargreaves and Galton 2002), helping encourage a positive view of school (Berndt and Keefe 1995), and helping create a better sense of 'school belonging' (Lubbers et al. 2006). (See review in Blatchford and Baines 2010.)

But peer relations are also important in relation to learning and academic attainment (Webb and Palincsar 1996). Perhaps the most obvious role of peers in school learning is that they can be a source of information. If a child gets stuck on a piece of work other children either informally or formally can help. Interestingly, and against some teachers' views, friends perform better on school tasks (Newcomb and

Bagwell 1995; Zajac and Hartup 1997), for example, because they know each other better, there is more commitment, and they are better able to resolve disagreements.

Another, more formal, role of peers in school learning is through the learning that takes place in group work. Following on from the tradition of social psychology mentioned above, particularly with roots in the notion of interdependence, some researchers have found collaborative group work to be an important educational initiative with benefits for academic and social development (Johnson and Johnson 1987; O'Donnell and King 1999; Slavin 1990). But, despite this evidence, we saw in the last chapter that collaborative group work is relatively rarely seen in classrooms (Kutnick and Blatchford 2014). In line with the comments at the end of [Chapter 5](#), we also make the point that teachers do not often make the most of the opportunities for learning arising out of peer-to-peer interactions. We return to this point in the conclusions of this chapter.

Schmuck and Schmuck (2001) argue that the formal school curriculum and classroom learning and instruction cannot be separated from the powerful informal relationships within the peer group. Peer relationships will affect academic learning, and vice versa. The researchers give the example of their own seven-year-old son. He was struggling to make new friends, and at the same time was having a frustrating time learning to read. In consequence he became, for a short time, out of control at home, and withdrew into excessive, sullen TV viewing. The emotional dynamics of the informal peer group can go hand in hand with academic learning.

In a similar way, Nuthall has stressed how relationships between children can be fundamental to learning, in that they affect how information is handled and received. The common-sense view is that learning results from engagement with the teacher and in classroom activities: do what you should do, and learning follows. But Nuthall (2007) argues convincingly that learning is filtered through different power relationships and social status hierarchies, so that each student engages in tasks in different ways. There is no guarantee that doing the task means learning is taking place.

As every teacher knows, pupils vary a good deal in how well they work together. Some are helpful and constructive, others are over-dominating, some are passive and left out, and still others are destructive and unhelpful. These differences are important because they can mean the difference between a class that is easy to teach and academically productive and a class that is not. Teachers often report that peer

relations affect the quality of classroom processes and learning, and can cause difficulties that must be resolved by the teacher.

Class size and peer relations

Despite the importance of peer relations in academic and social development, and the role of classroom contexts and interactions in school progress, we know next to nothing about the ways in which these two things are connected, that is, whether and in what ways peer relations are affected by the classroom contexts pupils experience during the school day.

Some years ago, Bourke (1986) concluded that the effect of class size on student interpersonal relations is in need of further study; this, it seems, is still the case. As we saw in the last chapter, logically and empirically the number of pupils will affect the size and/or the number of within-class groups. We also saw some ways in which relationships between pupils in a class can be affected by the size of the class, for example, in terms of cohesion and tolerance. There are some suggestions from social psychology that group processes like cohesion can be affected by size of group (Brown 2000), though to our knowledge this has not been developed for school contexts. In this chapter we explore these possibilities more fully.

Given the lack of research on class size and peer relations, any predictions about the connection between them will need to be tentative. In general terms it seems likely that in larger classes there would be more negative and aggressive behaviours between children, and this is supported by some reviews (for example, Finn et al. 2003). Research on children at nursery level has found that less favourable staff–pupil ratios result in more negative relations between children (Smith et al. 1988).

With more children we might also expect relationships to be more spread out and diverse, and there to be more likelihood of the formation of peer cliques. This might also mean the class as a whole is less integrated and cohesive. It is also possible, of course, that the greater diversity and more numerous subgroups likely in a larger class mean that rejected children can find others to work and play with. Finally, we might expect larger classes to present more problems for the teacher in terms of managing relationships between pupils. But, again, this might work the other way round, in that children in larger classes may be forced to rely less on the teacher because her attention is spread across more pupils, and therefore become less reliant on her.

In this chapter we seek to follow up on these possibilities and find out whether (and if so, how) class size and peer relationships are connected.

Results on class size and peer relations

In this chapter we rely on three sources of data. We first look briefly at results from the systematic observation part of the CSPAR KS2 study, but we rely mostly on two main sources of data – the CSPAR KS2 Years 5 and 6 case studies and the Years 5 and 6 teacher questionnaires (TQs). As we have already seen, these two forms of data collection rely on the views and experiences of teachers, and there is an obvious question about the validity of teacher views of children’s peer relations. Teachers themselves sometimes seemed to be aware of their own distance from relationships between children in their classroom; this was seen in its most extreme case when they suggested we ask the children what they felt, as if recognising that the children themselves are the experts on this feature of classroom life.

Though we therefore need to acknowledge the limits of the data presented in this chapter, we also, once again, defend the use of teachers as informants. Teachers can get to know their pupils well over the course of a school year, in particular in primary schools, where – in the UK at least – they will often teach pupils for most school subjects. They will both experience and manage the countless everyday contacts between children. Of course, their views and experiences have to be treated as subjective, but they are a rich resource, full of wisdom often born of many years’ close experience in managing and observing children. More than this, their comments are unique as a primary source, reflecting privileged access to their pupils. By comparison, even the most diligent and well-funded observation study is unlikely to get anywhere near the same access to children’s school lives.

Class size and the amount of peer interaction: A result from the systematic observation study

Before we turn to the case studies and TQs, we first report one result from the CSPAR KS2 systematic observation study. This is the part of the study which we used to address teacher–pupil interactions in [Chapter 4](#). We saw there that the observation category system was divided into three main ‘social modes’ – first, teacher–pupil interaction; second, times

when pupils were not interacting with anyone; and third, times when pupils interacted with other pupils. Here we just briefly report on the results on the third social mode.

We found that there were significantly more target child–child interactions – in other words, peer interactions – in small classes, compared to large. The converse also applied, that is, in larger classes there is *less* peer interaction. Putting the main observation results together with those from [Chapter 3](#), therefore, shows that in large classes in Year 6, children are more passive and receive less individualised attention from teachers, and yet there is not the compensating effect of more peer interaction. We return to this finding in the concluding section of this chapter.

Class size and peer relations: Years 5 and 6 case studies

We now turn to results from the CSPAR study case studies to see what light they shed on the connections between class size and peer relations. As described in earlier chapters, case studies were carried out in classrooms when the pupils were in Years 5 and 6 (9–10 and 10–11 years of age). Let us start with a look at the five case studies of small classes at Year 5.

One component of the case studies were the observations by the researcher. These indicated that in these small classes there was a high degree of harmony between the children and a willingness to support one another. Only one of the five small Year 5 classes showed a lack of cooperative relationships, and this was confined to a small number of girls in the class. In line with the observations, the teachers and TAs in their interviews spoke well of the relationships between pupils in their classes. It became clear to the researchers that the teachers had a lot to do with this state of affairs, which was their reward for spending a lot of time, especially in the earlier weeks of the year, cultivating positive relationships. It seemed that children who had been together in previous years started with an advantage, and this no doubt helped in the overall adjustment of the class. The teachers indicated that there were still some individual pupils whose behaviour required careful handling, for example, in terms of where they could be allowed to sit and who they could be set to work with.

Of course, this kind of descriptive account cannot be taken as evidence of a causal link with class sizes. Moreover, there was not agreement between teachers in how important they felt class size to be. Nevertheless, most teachers' and TAs' comments, along with the observer's notes, indicated that class size was one factor that affected

peer relationships. It seemed to teachers that smaller classes allowed a more supportive ethos and that, in line with results in [Chapter 4](#), having more pupils meant less time per pupil, and the building of a relationship with each child was consequently harder to achieve. One teacher specifically put relationships at the heart of learning.

Let us look in a little more detail at the views of the teacher and TA in one small Year 5 class. The teacher in this class was specific in saying that the small class has allowed her to address very difficult behaviour from last year:

We've been able to take the time and talk about how we behave with each other, and they're getting there ... they're appreciating each other's work and I don't think they'd have the space and comfort to do it [if class was bigger] ... (Year 5 teacher)

The pupils had learned to avoid making one another angry, and they were now better adjusted. The teacher was adamant that with a larger class the pupils would not have made as much progress in their relationships. She had tried to create a positive atmosphere, with an emphasis on independent working and working well together, and with appreciating each other's ideas.

The TA in the same class also felt that the children's adjustment was very good, they had friendly relationships, and were helpful and caring. They were now able to hold discussions in small groups which they could not do at the start of the year. She felt that in a larger class with bigger groups, cooperation between children would not be so good and it would be harder to get agreement.

Another Year 5 teacher also found the children worked well as a class and respected one another. She described them as like a 'family', with 'clowns' and 'leaders'. The teacher felt that in a bigger class there would be less chance of all getting on and there would be more problems. Her view was that relationships between pupils underpinned productive learning experiences and interactions. She valued the free and open discussion she found in this small class and felt that this was less likely in a big class, where there was less time for each pupil. Sometimes there were arguments leading to tension, but generally the pupils were happy, and overall there was a relaxed atmosphere.

Turning to the Year 6 case studies of small classes, the teacher in one class also saw class size as a factor benefiting social relationships in the class. She said there were problems with some boys and as a result they had to be spread around the classroom. In the teacher's view,

more pupils of the same sort would make for a very different situation: 'the makings of a nightmare'. Given the composition of the class, the teacher felt that small numbers had benefited the class. There was at least one complication resulting from small classes however, which became evident in the difficulties in assimilating a newcomer to the class mid-term. The teacher felt the pupil did not help his case because he had 'baggage' which affected his attitude and others' responses to him. In an echo of some comments from the TQ which we look at later, 'a larger class may have been easier for him to blend'.

The TA in the same class said the pupils were very well bonded, and pleasant to work with. This was helped by the fact that the 'majority have been together since day one', and in consequence were 'a happy unit'. The TA's view was that the number in the class would not make a difference to this, though only up to a point.

... beyond that point I think children would diversify into their different little groups more and I think we would have bigger behaviour problems.

Some of the teachers involved in the case studies of small classes at Year 5 and Year 6 felt that the type of pupils and existing relationships between the children were the most important thing. The teacher of one Year 5 class said that the children in her class had very good peer relationships and positive attitudes, and that the atmosphere in the class was calm and quiet. There was a caring ethos in the class and an indication of this was the way the whole class had shown interest in the progress of a boy with Asperger's syndrome. In her view, the important driver was the type of individuals in the class. The TA of the same class felt the class was like an extended family – they had known each other a long time and they cared about each other. Like the teacher, the TA felt that a larger number of pupils would make no difference – it was the ethos of the school that helped make newcomers instantly accepted as well as existing relationships between pupils which were warm, understanding and tolerant. We look more specifically at the types of pupils in the class in [Chapter 9](#).

Turning to large classes, the classroom observations by the researcher showed that most large Year 5 classes, like the small classes, demonstrated good peer relationships, characterised by tolerance, cooperation and respect for one another. Only one teacher was negative about the pupils' behaviour and relationships, blaming the parents for the children's poor social skills.

The opinions of these Year 5 large class teachers differed regarding the effect of having more pupils in the class. Some suggested that larger classes run the risk of less cohesion, more cliques and a less relaxed atmosphere, but the teachers also felt that the particular pupils in a class were significant in how relationships developed. One referred to pupils whose level of maturity has a bearing on their behaviour with others in the class.

There was similar picture in the Year 6 large classes. The classes were described as well adjusted, with good relationships, and classroom observations showed that the atmosphere in the five classes was characterised in positive terms. Three of the teachers commented on the 'temperamental' behaviour of some of the pupils, which was put down to their developmental stage.

The teachers in these large classes felt that class size was a possible influence on peer relations. Two teachers felt that a larger class affects their knowledge and understanding of the individuals in the class, since they do not have as much time with each child. A smaller class was seen quite differently by two teachers: one saw it as a benefit, with reduced potential conflict, whereas the other thought that the intensity of relationships in the smaller group would lead to more trouble.

Summing up the case studies

This description of results from the case studies, while unable to provide conclusions about the causal effect of class size, brings out some of the complexities of the connection between class size and peer relations. Some teachers felt smaller classes allowed a more relaxed and secure atmosphere and that this allowed teachers to deal with antisocial behaviour more easily, and for children to develop positive relationships and the ability to work constructively together. However, some teachers and TAs were of the view that class size was not the main factor in peer relations (though could still be one factor) and that the composition of the class and the extent of time they had been together were more important influences.

Class size and peer relations: TQ data

We now turn to the answers from Year 5 and Year 6 teachers in the annual teacher questionnaire (TQ) survey. They were asked a question concerning how they felt that class size had affected (if at all) relationships between pupils in the class. In comparison with the case studies,

there were many more responses across many more schools and so it was possible to get a broader basis for a thematic analysis of responses and a more reliable estimate of their prevalence.

All the comments from teachers were examined carefully and categorised into themes. The comments fell into three broad categories. The first of these was those comments that were either positive about the effect of small classes or negative about the effect of large class sizes on peer relations ($n = 121$). We shall see that this theme was further divided into six sub-themes. Second, there was the smaller number of comments that were positive about the effect of large classes or negative about the effect of small classes on peer relations (27). Third, there was a group of comments within which teachers felt there was no connection between class size and peer relations, where other factors were implicated or where it was not possible to determine if class size was seen as a factor in affecting peer relations (111). As answers in the third category were often not very forthcoming or informative about class size and peer relationships, in this chapter we concentrate on the first two categories, which were further sorted into whether the teacher had a small (25 pupils or under) or large (30+) class size.

Tallies or counts of responses provide some measure of the prevalence of each main category, though the aim of this section is not to pin down a precise estimate of each category but rather to provide a description of the different ways class size and peer relations were seen to be connected.

An analysis of this sort faces a number of difficulties, for example, because teachers sometimes gave a long and detailed account that covered multiple points – even, on occasions, seemingly contradictory points (for example, pointing to both the positive and negative aspects of large class sizes). Sometimes a response could be coded in more than one way, as, for example, when a comment was coded as relating to space problems as well as relating to peer relationships. This can mean that for a given teacher there will be multiple codes; the number of codes therefore exceeds the number of respondents.

Positive with small classes/negative with large classes

The detailed analysis of the comments in this category identified six main sub-themes under which their comments could be classified.

General – positive relationships. This first sub-theme covered relatively general comments on how small classes benefited the relationships between pupils (there were 9 comments for small classes and

24 for large). The following quotations are responses from Years 5 and 6 teachers in small classes under 25:

Less children = Children 'get on better'. [The teacher reported these were the children's own words.]

Good relationships within class.

Relationships have developed well and most children regard each other in a positive way.

The following Year 6 teacher with a class of 23 is a little more specific and shows the interconnectedness of class size, peer relations and other factors, which will be a theme of this chapter.

They have fewer people to relate closely with on a regular basis which makes it easier for them to maintain good relationships with each other. Any problems that occur are quickly apparent, and therefore quickly sorted out, resulting in a better overall learning environment.

This teacher connects fewer people, good relationships, visibility of problems and ease with which teachers can sort out problems in service of a better learning environment.

There were also general comments on the connection between class size and peer relations from teachers with large classes, sometimes well in excess of 30 ($n = 24$):

Do not have such a close relationship with many of the class.

Some children have hardly got to know each other.

One factor connecting class size to peer relationships might be that there is more mixing across the whole class when there are fewer children. Here is a Year 6 teacher with 36 in their class:

More mixing was possible in smaller class size. Children tend to work with same peers, less opportunities to mix with all Y6.

We come back to the issue of fragmentation of peer relations in larger classes below.

This Year 6 teacher links restriction of movement and building peer relationships in a larger class:

Not all children relate to ‘formed groups’ within the classroom – inevitable – geography of thirty-two in a class restricts movement therefore restricts building of relationships.

There was one subcategory of comments ($n = 21$) that could be situated in this theme of general comments on the effect of class size on peer relations. There were a number of comments that showed that one of the problems possible in a large class was the greater likelihood that children would fall out and clash. Here is a sample of the terms used by teachers when describing the effect of a large class on peer relations: ‘don’t get along’, ‘frictional relations’, ‘children clash together’, ‘personalities clash’, ‘strained’, ‘lots more arguments and fights’, ‘petty squabbling’, ‘verbally and physically aggressive to each other’, ‘needless squabbling’.

And here are more detailed comments from teachers with large class sizes, again of well in excess of 30 pupils.

I have experienced a lot more arguments and fights mainly to do with football. (33)

Occasionally they get irritable with each other about lack of space. (35)

On the whole, the group get on well together, numbers and lack of space, however, often leads to petty squabbling. (35)

There are 30 in the class and often they are verbally/physically aggressive towards one another because they are in a confined space. (31)

This tendency to fall out with each other was only mentioned by teachers with large classes. Some of these were also double coded when they linked the negative effect of large class sizes on the amount of space (see below).

Another subset of these general comments concerned the difficulties faced in stopping clashes between different personalities in the class (one way in which class size, type of individual pupils and peer relations are almost necessarily interconnected – as discussed below).

In large groups it is almost inevitable that personalities will clash and this is always considered when organising class groupings. (30)

Some problems again in keeping apart potentially frictional relationships. (35)

It can be quite strained. Several of the boys are on/off friends. There aren't enough corners to put them in. (30)

... because of the numbers if someone falls out they all 'gang' up together. Some children find it difficult being in a large class and become quiet, whilst the loud ones tend to perform to an audience! Also they fall out because of the lack of space on tables as a greater number of children have to share a table! (34)

We now turn to the other five sub-themes within this category. These reflected more specific, discrete aspects or qualities of positive peer relationships.

Cohesiveness/integration. The value of small classes for some teachers is that they enable the children to become a cohesive group ($n = 5$). The terms used to describe this were also 'gelling' and 'forming a close bond' as a group. In the teachers' own words:

Less children = 'gel as a class'. [their own words]. (22)

Although there are problems, I believe that the size of the class has helped make the bond with each other stronger. (23)

Small class size has put strain on some relationships and strengthened others. Generally bonded much better as a class. (18)

The converse process – that is, a negative impact on the cohesiveness of peer relations – was described in the case of large classes ($n = 8$):

It has taken longer for the class to bond together as a group which has led to a great deal of friendship group arguments. (31)

Due to there being so many, there can be friction in the class and they are not a closely bonded. (31)

A larger class is more difficult to shape into a cohesive team, so relationships suffer from this. (32)

One subgroup of comments was classified under the cohesiveness theme and this might go some way to accounting for the lack of cohesion in children's relationships noted by teachers. A number of teachers ($n = 13$) were consistent in finding that in their larger classes there was a process of fragmentation of peer relationships, for example, in terms of the formation of more subgroups and cliques, and that this process had a detrimental effect on the cohesiveness and bonding of peer relations as a whole.

The children in this class divide into quite strong friendship groups and find it difficult when asked to work with different children. (30)

Due to there being so many, groups have formed within the class which tend not to mix ... This has meant that there can be friction in the class and they are not a closely bonded class. (31)

Splits into separate groups – bigger 'gangs' of friends (and enemies!). Not as many people to fall out with in a smaller class. (31)

Pupils tend to keep to small group of personal friends. (36)

More mixing was possible in smaller class size. Children tend to work with same peers, less opportunities to mix with all Y6. (36)

Sometimes, teachers said that the formation of social subgroups in larger classes involved children of similar attainment/ability levels, and this is one way in which larger classes can contribute to more academic and social segregation. It is also one way in which the allocation of children to attainment-level groups for working purposes can affect peer relations and friendship groupings:

Children tend to stick to small, well-established friendship groups with limited social mobility (especially between low and high achievers). (31)

Supportive and caring toward each other. A third theme ($n = 6$) describing features of peer relations affected by class size was similar, though conceptually distinct. In small classes:

The pupils form caring and supportive relationships with their peers. (16)

They are more aware of what is happening in each other's lives and they are very supportive of each other. (23)

Quality of friendship relations. One of the advantages of using teacher's own words to describe any connection between peer relations and class size is that it can provide a grounded description of more subtle qualities that would be hard to access through other forms of data collection such as observation coding schedules. A fourth sub-theme referred more specifically to qualities of friendship relations being adversely affected by large classes, for example, in terms of durability, security, depth and lack of conflict in friendship relations ($n = 6$). In small classes:

Children seem to cope and retain friendships for longer periods of time. (24)

A smaller class has meant that the children do know each other very well. The majority of them feel secure in their friendships and relationships with each other. (25)

While, in larger classes:

Friendships in a bigger class are shallower and more strained. (31)

The longer comments below show the way that a large class can exacerbate the problem of dealing with friendship group issues:

We try hard to discuss problems as a class but it is easy for distractable children not to pay attention and distract others who want to work. Moving children who tend to be isolated by friendships is hard in a large class – the larger the class the more children who mustn't sit next to or within a group of others. I must constantly move them around. There are always friendship problems but it does seem to take up a huge amount of time. (35)

There are some conflicts in this class over friendship. Again because of the lack of space children do sit with others they do not get along with. They are fine in the classroom but at lunchtimes and playtimes they antagonise each other. Also, by the law of averages, the larger the class the more 'rogues' you have and again they are difficult to isolate. (38)

Tolerance. The fifth sub-theme referred to the greater likelihood of tolerance between pupils in small classes, and how it was easier to integrate newcomers, children with SEND, and provided less fertile conditions for bullying ($n = 5$):

When there are less children in the class they get on better with each other and are more tolerant. (29)

Conversely, in a large class there are more difficulties:

Bigger numbers = increased opportunities for 'insecure' class members to find vulnerable 'new' targets for bullying. I have set up a support group for vulnerable children (8) – of these, 3 are new to the school this year. (34)

Better working relationships. A sixth and final sub-theme category referred specifically to ways in which smaller classes allowed better working relationships – for example, working as a team, better group work, keep conversation going and more detailed, better social skills ($n = 5$). In more detail:

It has helped because the group in this class get on well and work as a team. If the class was bigger than this I don't feel would be as effective. (21)

Small group encourages open dialogue. (12)

... generally work well together. (20)

They keep conversations going and they seem more detailed in what they discuss. (24)

Sometimes, teachers referred specifically to the connection between class size and collaborative group work:

Group work is easy to plan and they work well together generally. (24)

The quieter atmosphere has encouraged shy children to speak in class as contributions are more valued by their peers. Group work is more manageable as the children now work better together. (26)

To summarise this section on the TQ results, teachers tended to feel that the quality of peer relations was enhanced in small classes. This was seen in terms of six sub-theme categories: (1) positive relationships in general; (2) cohesiveness (bonding, gelling as a group); (3) being supportive and caring; (4) the quality of friendship relations in terms of, for example, durability, security; (5) tolerance – for example, it is easier to integrate newcomers, children with SEND; and (6) better working relationships – working as a team, better group work, keeping conversation going and more detailed, better social skills.

We are not arguing that that these qualities only occur in small classes of course, but the teachers' extensive comments suggest that that they will be more evident and more easily engendered in a small class environment.

In addition to these six sub-theme categories, two additional codes were needed to cover teachers' comments on the effect of large class sizes on peer relations.

Space. There were a relatively large number of teachers ($n = 27$) who referred to the lack of space in classrooms, aggravated by large class sizes, and the knock-on effect this had on relationships between pupils. These comments were usually expressed in terms of the negative effects on peer relations of having less space or more confined conditions as a result of larger class sizes, though less frequently teachers cited the positive effects of a smaller class on peer relationships when there was more space. As we have seen, sometimes these overlapped with comments cited above: for instance, they also covered an accompanying increase in conflicts between children. The basic point is that class size and space in the classroom are interconnected factors that affect peer relationships. Here we present some quotations from Year 5 teachers with large classes (those from Year 6 teachers were similar).

Keeping distance between desks and chairs to avoid contact impossible so movement has to be restrained – leads to less investigative work. (30)

‘Rat syndrome’ at times. (31)

More irritable with each other due to less space/less personal space. (31)

When the classroom is crowded children ‘rub shoulders’ with others more frequently and this can cause tensions. An emptier classroom is much calmer and gives a quieter working atmosphere – when 6 go out for ‘booster’ classes for example. (35)

Close proximity to each other, none or little personal space means they conflict with each other more readily. (35)

Classroom management problems for the teacher. A second set of additional comments focused on the connection between class size and peer relations. There were a number of comments by teachers ($n = 20$) that showed how smaller class sizes made the job of managing peer relationships much easier, and how, conversely, larger classes made this more difficult. The following comments come from Year 5 teachers (again, those from Year 6 teachers were similar).

With a small class:

Any petty disagreements have been dealt with quickly as they have been easy to pinpoint. The classroom is large enough and the class small enough to have ‘time-out’ zones when required. (19)

They have fewer people to relate closely with on a regular basis which makes it easier for them to maintain good relationships with each other. Any problems that occur are quickly apparent, and therefore quickly sorted out, resulting in a better overall learning environment. (23)

Good class relationships. Squabbles or potential problems are easier to detect and therefore deal with before they become major incidents. (18)

With a large class:

Sometimes I feel that I haven't got time to really sort out the more severe emotional/ social needs because of the numbers. (30)

In large groups it is almost inevitable that personalities will clash and this is always considered when organising class groupings. (30)

We try hard to discuss problems as a class but it is easy for distracting children not to pay attention and distract others who want to work. Moving children who tend to be isolated by friendships is hard in a large class – the larger the class the more children who mustn't sit next to or within a group of others. I must constantly move them around. There are always friendship problems but (in a larger class) it does seem to take up a huge amount of time. (35)

Positive with large classes/negative with small classes

There were far fewer comments ($n = 8$) that argued – interestingly – that peer relations were worse in small classes and better in large classes. This was almost always connected to one factor: restricted social and friendship possibilities in small classes and the way large classes allowed more friendship choices. The basic idea is that it is easier for a child in a larger class to find someone to be friends with or with whom one is compatible, while in a smaller class if a child falls out with another pupil it may be more difficult to find alternative friends.

Here are a few responses from Years 5 and 6 teachers who were negative about small classes:

Occasionally difficulties can arise due to the fact there are less children to choose friends from and if you have a disagreement with a friend there are not so many others to turn to. (24)

Small class – not enough children for relationship building – divides into cliques. (23)

I feel (with a small class) it should be a lovely opportunity for children to work in different ways – individually, pairs, groups, class, but having worked a few times with very small classes,

disputes, minor incidents occur more frequently. Often some children feel isolated as they can't find someone 'like them' – not enough children to choose from. (19)

And here are some positive comments from teachers about large classes ($n = 19$).

Larger number can be beneficial at times as a larger combination of groups gives variety. The good thing about a large class is that if any children do fall out they have several other friends in the class. (33)

Children feel a large class is good for interpersonal relationships as there are always people around to play with/talk to/work with. (35)

Larger classes can sometimes help relationships due to wider choice of friendship combinations. (31)

In larger classes there is more opportunity for children to find like-minded children. (34)

There were a few other comments in which teachers said that larger classes can help with sharing ideas, and with making it less easy for a dominant child to take over.

Conclusions

The importance of peer relations

Over and above any connection with class size, the case studies and the TQ results revealed fascinating insights into the world of peer relationships in classrooms. The interviews and answers from teachers showed their awareness of and sense of responsibility to how pupils lived together under their care. There was talk of the fallings-out between certain individuals, the development of friendship groups, the way children could divide on lines of gender or level of attainment, the way newcomers were sometimes accepted by their peers and sometimes not, and there was occasional talk of bullying and problems at breaktime spilling over into the classroom. In the case studies, in particular, we saw

how teachers commented on how pupils helped and cared for each other. Sometimes teachers felt this was because the class, or at least most in the class, had been together for many years, in some cases since the first reception year in school; they had therefore minimally got used to each other and at best developed positive, supportive relationships.

Though teachers often know a lot about the relations between children in their class, there are also, as Nuthall (2007) pointed out, limits in their knowledge of the often-hidden world of peer relations in schools. And, as we said above, teachers themselves sometimes seemed to be aware of their own distance from the relationships between children in their classroom.

Nevertheless, teachers spend a lot of time managing relationships between children, sometimes on an incident-by-incident basis and sometimes more formally, through a sustained setting out of rules and expectations at the beginning of the school year or a substantial intervention when the need arises. In many cases, teachers across the country do an astounding job of forming a productive social group out of a relatively large group of often diverse individuals. The scale of the achievement is often underestimated – not least by teachers themselves. The fact that teachers usually manage 25 or so pupils into a largely well-functioning and biddable group is a testament to how effective they are in managing pupils and relationships between them. Teachers are sometimes criticised in the media, but the everyday way the vast majority facilitate productive peer relationships hardly gets mentioned.

The common, albeit implicit, assumption that peer relations in school are in a sense peripheral to the main business of learning and academic performance is mistaken in our view. There are two main points to make here. First, as we saw at the beginning of this chapter, peer relations are important in their own right. The development of everyday interactions between pupils are not peripheral but important ‘outcomes’ in themselves. Elsewhere we have argued (Blatchford et al. 2016a) that the social skills revealed in informal peer relations, as seen in the classroom and on the playground – skills like turn taking, taking another person’s perspective, negotiating, accepting disappointment, avoiding and managing conflicts – are very similar to the kinds of skills used and needed in productive working interactions, and form the basis for cognitive enhancement. It is no surprise that employers are now more and more arguing that it is not just academic attainment they need from young people leaving schools and universities but the skills of being able to solve problems and work together. These are important human

qualities in their own right and of value in the world outside schools. In our understandable preoccupation with academic achievement we should not lose sight of this.

The second point to make about the importance of peer relations is that as well as being of importance in their own right they are important in underpinning productive classroom relationships and learning. As we saw at the beginning of this chapter, good peer relationships in the classroom can benefit learning. Learning in classrooms is not separate from positive social relationships but underpinned and facilitated by them.

Class size and peer relations: Summary of findings

Having made the point about the importance of peer relations in their own terms, we now turn to what we have learned about the role of class size in peer relationships. Examining the case study interviews and the extensive comments by teachers of Year 5 and Year 6 classes, some felt that class size was not related to peer relations, or that the connection was not direct but affected or mediated by another factor, such as the composition of pupils in the class.

Nevertheless, the majority of teachers in both the case studies and the TQ were clear that peer relationships were better in a small class or worse in a large class. In the case studies there were a number of comments on how smaller classes led to more positive relationships and less conflict, to more cohesive relations and less fragmented social and friendship groupings; children were more supportive and caring toward each other, more tolerant of newcomers and pupils with SEND, and showed better and more productive working relationships. A similar picture emerged in the analysis of the TQ responses, and we identified six main ways in which peer relationships were positive with small classes or negative with large classes (see **Key Themes** box below).

Key Themes

Peer relations

- General
- Cohesiveness/integration
- Supportive and caring
- Quality of friendship
- Tolerance

Interestingly, there were a few comments from teachers that indicated – contrary to the above view – that larger class sizes could benefit peer relations. We think we need to point out, however, that these positive comments all referred to the larger range of potential social contacts in larger classes and how this could be helpful when children fell out with existing friends. The important point here is that positive comments about large classes were confined to the quantity of social connections; it is 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, tolerance etc. We think this is an important point.

There is a disjuncture here between the kinds of qualities of peer relations referred to in this chapter and the usual more easily measured outcomes of academic attainment. Many academics and policy makers would no doubt be unconvinced about talk of relationships in the class as a benefit of small classes, but this might be turned on its head so that the criticism could be that numerical analyses of academic attainment outcomes might be missing key and important features of classroom life which, although hard to research and measure, might nonetheless be vital for effective learning. This suggestion requires further attention and research.

We can consider peer relationships within the class not only as a pupil outcome but also as evidence of classroom processes; in this sense the work in this chapter is relevant to both the first and second aims of this book (concerning outcomes and processes, respectively). We have considered peer relations more in terms of a classroom process in this chapter, but if we for a moment consider peer relationships as a kind of pupil outcome of class size differences, then we think this extends the argument in [Chapter 3](#) about the clash between the practitioner view and research findings. It may also help further extend the solution we offered in relation to the first of our two ‘class size conundrums’ (CSC1 and CSC2) – that is, the preoccupation in much research and commentary with academic attainment, narrowly defined, may miss important consequences of class size for pupils’ school progress and development.

The work on peer relations in this chapter may also contribute to our understanding of CSC2 (Why don’t pupils in larger classes seem to obviously suffer, and why don’t pupils in smaller classes more obviously make better progress?). Over and above any direct effect of class size on peer relations, there is also the way that class size can affect teachers’ management of peer relations. A large part of classroom management involves managing relationships in the classroom, and a clear result

from this chapter is the way that a large class could lead to more conflict and squabbling between pupils and more demands on classroom management.

This also leads to a point we make in other parts of this book – that the effects of large class sizes may be minimised because of the great efforts teachers in large classes make to mitigate the potentially adverse consequences of a large class, in this case on peer relations. It was clear that most teachers – no matter what the size of class – had clearly taught pupils how to behave well within the classroom context and had successfully established expectations which were the framework for class life. But it is also clear that teachers in larger classes had to work that much harder to achieve the same outcomes. We pick up this point about the compensatory efforts of teachers in large classes in other chapters in this book.

In this chapter we have concentrated primarily on the practitioner view on peer relations. We have reiterated our recognition that there are limitations in this form of data, both in terms of the extent to which data might not be an accurate portrayal of what actually takes place, and also because of the intrinsic difficulties any adult has in accessing the world of childhood relations and friendships.

It is therefore important we feel to conduct more research on peer relations in classrooms. Despite their undoubted importance, it is interesting how little researchers know about the everyday processes through which relationships between children develop and affect learning, and how friendships and cliques develop over time. The most appropriate method of data collection seems to us to be detailed observations of peer groups over time (see McGrath and Altermatt 2001). In particular, and connected to this book, there is also great potential for social psychological approaches to peer relations in schools, to help develop further insights into contextual influences such as class size on group cohesion, interdependence and social structures, including cliques and subgroups.

Interconnectedness of class size effects

It is very difficult to determine a precise estimate of the exact role played by class size in relations between pupils. This is not just because we do not have enough research or because our estimates are not accurate enough, but because there is an inherent difficulty with such a quest. To pick up on a recurring theme throughout this book, one of the values of a careful study of class size effects, as in this book, is that it brings out the

complex interconnectedness of many factors. What comes across is the way that, while class size probably does not have a direct role in pupil attainments or pupils' relationships with each other, there is a complex set of interconnections between class size, peer relationships, the history of the relationships between the children, the composition of the class, classroom size, and so on. Even when teachers felt that class size did not have a clear role in the formation of relationships between children, some recognised that large class sizes can make the handling of pupil relationships more difficult and that small class sizes can make it easier. We see again the fallacy of searching for the single cause and single effect. In a way, teachers – who often both experience and articulate the complexities involved – are one step ahead of much direction of research on class size effects. This is a point we return to in each chapter and develop further in the last chapter of this book.

Class size and peer relations: Pedagogical implications

In the last chapter, we saw that dealing with the group-based organisation of pupils in UK classes was made more difficult by larger classes, and at the end of the chapter we argued that more could be done to adapt teaching so that it made more of group-based organisation, and also, more specifically, used collaborative group work. We found no evidence that teachers used peer or group-based learning as a way of dealing with large classes.

In this chapter, examination of the connections between class size and peer relationships brings into sharp relief the overriding importance of peer relationships within the classroom and raises questions about what teachers can do to help develop high-quality relationships. We have to be careful here. We are not suggesting there is a serious problem with teachers' management of peer relations. We have repeatedly said that it seemed for the most part to be done effectively. We are not suggesting here the need for a general guide to aiding relationships between pupils.

We do, though, think that there is more that teachers can do to make the most of the opportunities of peer interactions for learning purposes. Teachers, as we have seen, and especially in large classes, can spend a lot of energy managing relationships between children. It is our view that they rarely find or take the time within the curriculum to work on child-to-child strategies that can help to overcome these difficulties. In other words, the management strategies are fundamentally teacher to pupils, rather than developing child to child solutions.

A 'relational approach' to encouraging high-quality group work: The SPRinG project

What we are suggesting is the value in encouraging the conditions needed for high-quality group work. This, we believe, is of value in large classes, to help teachers make best use of more limited time with each pupil. But it is also of value in small classes, where, as we found in previous research (Blatchford et al. 2001), there is if anything less group work taking place. In this chapter we introduce an approach adopted in another of our projects – the SPRinG project – which provides the basis for teachers and schools to introduce high-quality group work. One of the key principles of this work is that good relationships between pupils need to be developed in order to encourage high-quality group work. We stress the value of a 'relational approach' to develop collaborative learning and group work skills. This is perhaps particularly important in large classes because the teacher is less able to monitor each group.

There is a growing international impetus to enhance children's active engagement and collaborative learning. It is increasingly realised across the world that students not only need to acquire knowledge but also the desire and skills to work well together. The ability to work collectively with others has been described as a key twenty-first-century skill (Griffin et al. 2012) and likely to be more in demand within the workplace as we move towards an increasingly automated and knowledge-based future.

However, it has been found that primary and secondary schools in Britain often do not utilise collaborative group working amongst pupils. The stress on school accountability and high stakes assessments of pupils often makes it difficult for teachers to feel they have the time for collaborative group work. In a programme of Economic and Social Research Council (ESRC)-funded research we have shown that even when children sit around tables in groups, as is often the case in British primary classrooms, it is surprisingly rare for them to be asked to work collaboratively (Kutnick and Blatchford 2014). Although much psychological theory argues that collaboration with peers is a powerful force in conceptual development, active learning and communication, and despite collaborative learning being listed as one of the most effective approaches in the reviews of effective interventions in education (for example, Hattie 2009; Higgins et al. 2013), existing approaches to enhancing collaborative group working within school contexts are limited. Without effective strategies for teachers to promote successful group work, grounded in the realities of classroom life and interactions,

attempts to implement and utilise group work 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 large-scale SPRinG project, co-directed by Peter Blatchford (UCL IOE), Maurice Galton (Cambridge) and Peter Kutnick (Brighton) and funded by the ESRC Teaching and Learning Research Programme (TLRP). It was designed to address what were seen as limitations of other approaches to group work and to test the implementation and use of a new approach to group work in primary and secondary school settings. It is the single biggest study in the UK, and perhaps worldwide, on group work. It involved a year-long collaboration with teachers to develop resources and approaches to enhancing group working followed by a year-long quasi-experimental longitudinal evaluation of its effectiveness, and a further year identifying and testing applications of group work: for example, for schools working under challenging circumstances. The results, published in many publications (for example, Baines et al. 2007; Blatchford et al. 2006), gave clear support for the academic and interactional benefits of group work: children who took part on the programme had raised levels of achievement in English, maths and science, and group work improved pupils' behaviour in class as well as raising levels of active engagement in learning and facilitating more higher level, thoughtful learning processes. There was also a Scottish extension of SPRinG led by Andy Tolmie, Christine Howe and colleagues, and SPRinG has been applied successfully in the Caribbean and East Asia. A full account of the research in primary schools can be found in Kutnick and Blatchford (2014).

The SPRinG approach goes beyond previous cooperative and collaborative approaches by stressing the strategic integration of group work across the curriculum and school day and also because of its relational approach to enhancing group working in classrooms. The programme aims to develop the following: (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. As a result of the work conducted with teachers, a handbook of guidance for schools and teachers was published by Routledge. A second edition has recently been published (Baines, Blatchford and Kutnick 2017) with several new features, including a whole-school approach and the international case for group work (for example, in East Asia).

The first principle of the SPRinG project is particularly relevant to this chapter – the focus on supportive relationships between pupils through a ‘relational’ approach. One cannot just put children into groups and expect high-quality group work; group work skills have to be developed. The ‘relational’ approach develops communication skills and sustains a positive group work ethos. The group work activities are organised around a developmental sequence: (1) Social skills (trust, sensitivity, dealing with conflict); (2) communication skills (taking turns, active listening, giving and asking for help, explaining and evaluating, arguing and counter-arguing; summarising); and (3) ‘Advanced’ group-working skills (making group decisions, compromises, coming to consensus, planning timescale for work, group roles). As a result of these activities, pupils should have trust and respect, be able to engage in high-level talk involving explanation and counter arguments, have an ability to organise work independently in groups, and have a willingness to reflect on how the group is working.

The programme handbook for teachers and schools (see Baines et al. 2017) provides guidance on the key role of the teacher in adapting group work for different learning tasks and in supporting groups. The key aim is to encourage pupil independence rather than directly teaching pupils. Another principle offers guidance on the role of the teacher in encouraging group work. In brief, the aim is for teachers to think strategically about their role in the group, in terms of supporting lessons through briefing and debriefing, supporting interaction through scaffolding, modelling and reinforcing group work, and monitoring group work.

7

Class size and classroom processes: The curriculum and tasks

In previous chapters we have examined the way class size affects the classroom processes of teaching, grouping practices and classroom organisation, and also its effect on peer relationships. In this chapter the focus is on the connections between class size and the everyday work activities that pupils engage in. It is about the types of curriculum areas covered and about the tasks and activities through which curriculum areas are covered.

This chapter, perhaps more than any other in this book, shows the extent to which, and ways in which, class size is likely to be interconnected with many aspects of classroom life and processes. We shall see this in the way that class size has implications for the coverage of the curriculum and for tasks and activities used to engage pupils in the curriculum. We shall see also that the relationship between class size and the curriculum and tasks is mediated by three key factors: space, time and resources, which in turn seem to affect the types of activities and tasks that children are given. We shall also suggest that the connection between class size and curriculum and tasks is itself affected by the composition of pupils in the class, and in particular by the range of ability or attainment levels in the class. This, in turn, highlights the issue of class size and differentiation in teaching and task activities.

The curriculum around the world

The content and control of the school curriculum varies across the world. As we shall see, the UK has a national curriculum, devised by government

agencies and covering the subjects and content that are required by law. This is also the case in, for example, Australia, New Zealand and Russia. Examinations are also used as a means of setting and maintaining national standards.

In some countries there is regional variation. In the United States, for example, each state sets its own curriculum subjects and content and exams. A Presidential initiative advocating a ‘common core’ was attempted, aimed at creating ‘national standards’, but adoption was voluntary and not all states opted in to this federal vision of the curriculum.

France has devolved curriculum design, implementation and examination arrangements down to the 28 regions of the country, although in practice these vary very little as they consult with one another on these aspects of education. Central government has set out ‘rules’ about how the teaching of French is to be done, though it seems many teachers ignore them. Teachers are all employed by the government and as such are civil servants.

India has also given curriculum powers to decentralised bodies, the school boards across this vast country. Each state has developed its own curriculum and all exams apart from the school leaving exams in Grades 10 (age 16) and 12 (age 18), are set by individual schools. The result is wide variation in content and standards.

The UK National Curriculum

In this section we need to say a little about the UK curriculum experienced by pupils in British primary schools, because this provides the context for the results presented in this chapter.

The situation in the UK, and Great Britain, is complicated. One complexity – as visitors to Great Britain (or ‘Britain’) are warned in travel guide books – is that Britain is an island region made up of England, Wales and Scotland, commonly referred to individually as ‘countries’. There is a further complication in that Britain is sometimes confused with the sovereign country of the United Kingdom of Great Britain and Northern Ireland (more usually referred to as the United Kingdom or ‘UK’), which comprises England, Scotland, Wales and Northern Ireland. In this book we concentrate more on England and Wales. This is because this is where our data were collected, and because England is by some measure the most populated part of the UK (in 2011 there were 63 million people in the UK, with 53 million of these in England – 10 times the population of Scotland).

The situation is also complicated from an historical point of view. When the authors were themselves at primary schools in the 1950s in East London and Chatham (PB and AR, respectively), teachers had a large degree of freedom to decide on the curriculum experienced by pupils. In 1988, a National Curriculum (NC) for schools in England and Wales was introduced by the then Conservative Government as part of the 'Education Reform Act'. The NC arose from a number of reasons, but reform was largely driven initially by the concern of politicians in the 1970s with what was perceived as a crisis in educational standards – a speech in 1979 by the Labour party prime minister James Callaghan is often cited as crucial. The NC covered 11 subjects over the age range 5 to 11 years which were separated into Key Stage 1 (KS1, age 5–7) and Key Stage 2 (KS2, age 7–11). (Secondary level education would encompass Key Stages 3 and 4, or KS3 and KS4.) For each subject and for each key stage, programmes of study set out what pupils should be taught, and attainment targets set out the expected standards of pupils' performance. It was for schools to choose how they organised their school curriculum to include the programmes of study. In its original form, the NC contained a huge number of learning objectives, set out in detail in the programmes of study for all its constituent subjects, with the exception of religious education, which was to be agreed locally.

By 1993, the manageability of the NC and accompanying assessment arrangements concerned the Government sufficiently to set up a review, published a year later as the Dearing Review (Dearing 1994). It contained several recommendations regarding the slimming down of the content.

The content of the National Curriculum is excessive and should be slimmed down ...

The slimming down of the content should be associated with a review of the number of attainment targets and a reduction in the statements of attainment. (Dearing 1994, 28 and 29)

The Government implemented his recommendations in The Education Act of 1996, which addressed the obvious curriculum overload of the 1988 NC, and a new slimmed-down version of the NC was published, with fewer attainment targets and a reduction in content. By 2014 there was a new version of the NC, which was to be introduced across the period from 2015 to 2017.

The National Strategies for Literacy and Numeracy

By the time of the beginning of the CSPAR study, the national curriculum strategies for literacy and numeracy were also implemented in primary schools, following their introduction in 1998 and 1999. These initiatives by the government of the day were intended to prescribe and control the major elements of the curriculum content and to some extent, the approaches to teaching, at least in English and maths. This degree of control by central government was a new and remarkable departure in Britain and moved much of the freedom of choice from the hands of individual teachers. This inevitably led to more stress on the selection and development of tasks to achieve the targets defined by the strategies rather than meeting the learning needs of individual pupils, though as the evidence set out below reveals, teachers still have to make many choices on a daily basis about the scope, depth, pace and specific details of the curriculum for their particular pupils.

The National Curriculum Tests (Standard Assessment Tasks/ Tests – SATs)

Another major influence from central government, with an impact on teachers' choices of tasks and curriculum, was introduced in 1990. The Standard Assessment Tasks, or 'SATs', as they became known, were intended to raise pupil achievement by formalising and publishing results from a national assessment regime. The NC for KS1 and KS2 contained the 'attainment targets' for each subject, set out across six 'levels' of attainment. The SATs were originally used to assess pupil attainment in the three 'core' subjects – English, maths and science – in KS1 and KS2, as well as KS3. From the start, the SATs scores were designed to be combined with Teacher Assessments to give a more comprehensive assessment of each individual pupil's attainment at the end of Years 2 (age 7) and 6 (age 11), as well as Year 9 (age 14). (In Year 11 (age 16), the end of compulsory schooling in England and Wales, schools continued to use the national GCSE examinations as the assessment of their teaching and pupils' learning in KS4.)

Over time, the SATs were revised, and some were abandoned. For example, the KS1 science SAT in its original form was found to be unmanageable and unreliable, so it did not survive long. The KS3 SATs and the KS2 science SATs were scrapped in 2008. The national testing of science in KS2 was replaced by biennial sample testing in 2014, carried out by

external administrators on a compulsory basis. The 2014 revision of the NC included yet more changes to the assessments. Levels of attainment were replaced by 'scaled scores' calculated by teachers, and new English tests were introduced for KS1 and KS2.

In spite of the original broad and laudable aims of the NC, the focus of the SATs was perhaps inevitably on academic outcomes; even the Teacher Assessment regime was not set up to address other 'softer' broader pupil outcomes. The emphasis was on the levels achieved by pupils in the SATs. The wider curriculum had quickly become the NC and the 'flexibility' and 'discretion' which teachers were told they had was largely confined to tasks and attempts to relate the NC programmes of study to local opportunities and interests. The NC and the SATs have dominated schoolwork from their introduction.

Since the SATs were introduced to raise pupil attainment, the means chosen for achieving this outcome was a two-pronged strategy – the publication of school league tables and the use of the schools' SATs scores by Ofsted (the Office for Standards in Education, Children's Services and Skills) inspectors when carrying out school inspections. Inevitably, such public external factors were highly salient in teachers' daily decisions about the curriculum they taught and the tasks they prepared.

Tasks

Non-statutory guidance and Schemes of Work for each of the core subjects were published by the Government in 1989 and 1991 to provide exemplary plans and tasks which teachers could use unchanged or adapt to suit their particular classes. The National Strategies also provided copious amounts of exemplary material for teachers to draw on when preparing tasks for their pupils in English and maths lessons, both of which were prescribed on a daily basis. The greater part of the National Curriculum time was to be used for literacy and numeracy (Dearing 1994).

At each stage in the evolution of the NC, publishers attempted to create materials that teachers could use to construct their lessons, providing 'ready-made', 'off-the-shelf' tasks for all the core subjects at all Key Stages. This was particularly useful in the relatively newer subjects of IT and design and technology (D&T), which had been novelties when the NC was first launched in 1988. Depending on the availability of financial resources and the personal and professional preferences of heads and teachers, each school was free to choose from amongst the many books

and other materials available. The closer these materials stayed to the 'programmes of study' and the 'statements of attainment', the more attractive they were to teachers, since they could greatly reduce the time and effort required to prepare lessons day by day. Many published materials attempted to provide differentiated tasks, matched to the range of pupil needs and attainment, as in Nuffield Primary Science, for example.

Over and above national policies on the curriculum and assessments, schools and teachers have input into the curriculum covered in classrooms. Advice and policies on the curriculum will also sometimes come from the larger body to which schools can belong – to Local Authorities, where these still have any influence over schools, and, increasingly, to newer middle tier structures like multi-academy trusts. Individual teachers will also have their own preferences over the kinds of approaches adopted toward the curriculum, and the kinds of tasks and activities they use for teaching purposes.

Social psychological research on tasks and group size

Social psychologists have had a long-standing interest in group performance and processes and one of the main dimensions considered has been the effect of group size on performance (see Baron and Kerr 2003, for a good review). One of the very earliest experiments in social psychology was a study by Ringelmann (1913) who compared the relative performance of individuals versus groups of different sizes on a rope-pulling task. (It was found that performance increased with group size but always less than the last person added.) It was soon realised that there were a number of complications in answering ostensibly simple questions about the effect of group size. An influential analysis was provided by Steiner (1972), who showed that in order to understand the effect of group size one needs to consider potential productivity of the group and process loss. A lot of attention has also been paid to process losses or coordination in groups as they get larger.

From the point of view of this chapter there are perhaps two main conclusions to be drawn from this large body of work in social psychology. The first is that it is not possible to answer questions about group size without reference to the type of task undertaken by the group. Baron and Kerr discuss the main types of task stemming from Steiner's work, and used in much research on the topic: 'disjunctive' tasks, where only one answer can be given and the group must select the answer of a single presumably best member; 'conjunctive' tasks, where the group can

go no faster than the weakest member; ‘additive tasks’, where the group product is the sum or average of the group members; and ‘discretionary tasks’, where the group decide on individual contributions in any way they like. The effects of group size differ for these tasks. For example, in the case of disjunctive tasks, larger groups may well help because there will more skills to draw on. But for conjunctive tasks – for example, a climbing team tethered together by a rope – success is determined by how well the lowest performing member performs, and so the larger the group, the less productive it will be.

The second related conclusion is that, as with much research in social psychology, there are questions about the applicability of much of this research – largely conducted under predominantly experimental laboratory conditions – to everyday conditions like classrooms. There are a number of long-standing schemes that could be used to categorise curriculum tasks in schools (for example, Bloom et al. 1956), but in general terms one needs to cover tasks conducted individually, as a group, and directed by the teacher. And these tasks need to provide simple coverage of curriculum ideas (as in worksheets), development of new knowledge, investigations (for example, in science) and problem-solving answers to open-ended questions.

Class size and the curriculum and tasks: The research evidence

So far, we have described the background to the school curriculum and tasks in the UK and taken a brief look at social psychological work on group size, group performance and tasks. But what of the research on a more direct link between class size and the curriculum and tasks? In line with differences in the curriculum in different countries, as discussed above, we might expect that the effects of class size on tasks and the curriculum will vary between countries, for example when comparing countries with a centrally imposed curriculum versus a country with more local flexibility. However, to our knowledge this has not been explored (though see chapters in Blatchford et al. (2016b) for a comparison of the situation in the West and in East Asia).

Indeed there is limited research on the link between class size and the curriculum and tasks. Cahen et al. (1983) argue on the basis of their detailed research that the curriculum is one of the three main classroom processes affected by class size. They show that much of the curriculum taught in the US schools they studied (they only studied four) was not affected too much by class size, because the content of instruction was primarily determined by the textbooks, which was in turn affected by

school policy and teacher beliefs. But they also found that in a number of ways teachers in smaller classes were able to cover the curriculum more effectively: for example, because students were more attentive, lessons were therefore smoother and teachers could cover more content in more depth and more quickly. In smaller classes, curriculum activities were added that had not been done before and were additional to the basic areas of reading and maths – another reason why measuring class size effects only in these basic areas may miss other impacts.

The curriculum and tasks have also figured in other previous studies of class size and classroom processes. Anderson (2000) proposed that reduced class size has its effect on student achievement through greater individualised instruction and more in-depth treatment of material. Zahorik et al. (2002) proposed a main line of causal influence with smaller classes leading to more hands-on activities, which leads to deeper and more content, which leads to more student achievement.

The KS1 phase of the class size research did not set out specifically to collect data about the tasks and curriculum from the schools in the study. However, in looking at other aspects of classroom practice, through the use of questionnaires, systematic observations and case studies, incidental information about tasks and curriculum was gathered. The conclusion in Blatchford et al. (2003b) was:

The results ... suggest that class size differences can influence the depth of curriculum coverage. ... we did not find clear connections between class size differences and the amount of time that teachers spent in the main curriculum areas of maths and literacy. This is not surprising, especially now that in the UK there are clear guidelines about time to be spent in literacy and maths. Overall, our results suggest that it is the quality of teaching within curriculum areas that is related to class size differences, not the amount of time spent in coverage. (155)

However, we also noted the need for further verification. In this chapter we look at the situation for older pupils over KS2 (7–11 years), and in more detail in comparison to the earlier study.

As far as we know, there are no other UK studies that have looked at class size and the curriculum and task activities covered in classrooms. Our general expectation, given the largely government-set curriculum described above, was that the effects would be felt not so much on the overall coverage of the curriculum but in the activities used to cover the curriculum topic, and in the depth and detail of the coverage. In this

chapter we turned to methods of data collection in the CSPAR study to see what they told us about whether – and if so, how – class size was related to the curriculum and tasks found in the classroom.

Results on class size and curriculum and tasks

The connections between class size and curriculum and tasks emerged from study of two main sources of data, which were analysed separately:

1. The first source of data was the responses to the teacher questionnaire (TQ) question on class size and teaching. We looked at the categories that referred specifically to teaching in the chapter on teaching ([Chapter 4](#)), but there was a main subset of categories concerning the effect of class size on the types of activities set up by the teacher, and these we present in this chapter.
2. The second source of data for this chapter came from an analysis of answers collated across the various sets of data drawn from the KS2 phase of the CSPAR study (headteachers' and TQ responses in Years 4 to 6 and interviews and observations from the case studies in Years 5 and 6) in which there was any mention of the connection between class size and lesson content and tasks.

Following analysis of the collated data, across both sources, we identified four themes that described ways in which class size was related to the tasks and curriculum in the schools, as follows:

1. Curriculum and class size
2. Tasks and class size
3. Space, time and resources
4. Type and mix of pupils within the class.

We now describe each in turn, and will refer throughout to the source of data used.

Curriculum and class size

We need immediately to distinguish between class size and the curriculum, and between class size and the tasks and activities through which the curriculum is experienced by pupils.

The information analysed for this study showed that the relatively fixed nature of the curriculum, as described above, makes it difficult to change its main characteristics, whatever the classroom contextual features, including class size. But when one delves deeper into teachers' experiences, the results also suggest that there are ways in which class size does have implications for the curriculum as experienced by pupils.

Perhaps the most obvious thing to emerge in the schools studied was how in the last two years of primary education (9–10 and 10–11 years) the NC content, and the accompanying SATs used to assess pupils' and schools' performance, created pressures that were dominant in affecting the choices teachers of large classes made about tasks and curriculum. This was most acute in the oldest primary year, Year 6 (10–11 years), where the curriculum overload was felt to be greatest.

Obliged to cover curriculum, I still would do it [if class was larger], but it would be lip-service to it in some respects, because of just charging through, trying to complete everything. (Year 6 large class – teacher interview)

Whatever strategies are employed, Y6 still has a more limited curriculum because of SATs pressure and performance tables. Some foundation subjects are very limited until after SATs. (Year 4 – TQ response)

... you've still got the same amount of work to go through, no matter what [the size of class]. In Year 6 you've got to get through it all. The pressure of the SATs threatens the curriculum ... I try to keep all the subjects going. (Year 6 large class – teacher interview)

The accompanying problem is that class size can have an adverse effect on coverage of subjects that are towards the margins of the core curriculum.

Curriculum coverage would change if the class size changed. If more pupils – slower pace, each child has to keep up. Tied to the curriculum, don't have any choice, except music. Shy away from using instruments. (Year 5 large class – teacher interview)

In small classes, the whole curriculum as set out in the NC could be more easily covered because the number of pupils made it possible for teachers to deal more easily with all subjects and all pupils' needs. As

one headteacher reported, teachers of small classes were more willing to extend pupils' range of experiences by offering extra-curricular activities.

Tasks and class size

We now look more particularly at the kinds of curriculum tasks and activities which children experience on an everyday basis. Teaching is expressed through and supported by different kinds of activities, whether practical, investigative or problem solving, and its success depends on how well the teacher has chosen and set them up. How important is class size to this process?

One general thing to emerge from teachers' accounts is that as class size increases there is a tendency for approaches to teaching the curriculum to become increasingly restricted, with restrictions on practical activities and fewer investigative and time-consuming activities. If this is true, then such a shift, especially for pupils in the primary years, is regrettable. In spite of the prescribed curriculum perhaps being 'covered', there seem to be inevitable negative consequences of a larger class for the depth of activities provided, as well as for the satisfaction teachers feel about the teaching involved.

The TQ responses suggested that a larger class made it more difficult to provide some activities which teachers felt were educationally valuable. These included guided/shared reading and writing, hearing children read, science (especially investigations), and computer-based activities.

When teaching areas such as guided reading, guided writing, due to high numbers children usually only have opportunities to partake in this activity, once per week. This would be more frequent if there were smaller numbers (in the class). Also, guided reading and guided writing are activities ... which the children really enjoy. (Year 5 – TQ)

At present I have 31 children in my class, soon to be 32. I feel that this is a large class ... Things like hearing individuals read are obviously difficult, as is ensuring all children complete certain tasks, that is computer activities. Because of the large differences in abilities careful planning is essential and takes time. (Year 5 – TQ)

Given the problems of space and time, more likely with a large class, it was the more practical, but also the more investigative and sustained activities, that suffered, and this can compromise any efforts to encourage deeper levels of knowledge and conceptualisation.

Practical work

One of the most common types of activity to suffer in large classes, according to teachers, is practical work. As indicated in the next two teacher responses, it is not only individual teaching that suffers in a class with 31 and 32 pupils respectively but practical activities, especially in science.

Large numbers (and my class is not over-large in comparison to other schools by any means!) make it difficult to provide 1:1 attention, organise small intricate activities, e.g. make and do sessions, science practicals, capacity work. You feel guilty if you haven't spent time with every child each week. (Year 5)

Sometimes I find it quite frustrating when I have to struggle to do practical activities with such a large number of children, e.g. having enough resources, or enough space! (especially indoor PE). (Year 5)

The next response is interesting because it allows a teacher to compare their normal small class of only 19 pupils with a bigger class formed for science.

Having only 19 children enables me to teach and plan! ... Having all the Y5 and Y6 for science, however, has had a negative effect. Many children say they dislike science, which has never happened before. In part this may be due to the restrictions that have been necessary when doing practical work. It has also made it more difficult to undertake longer-term investigations, e.g. monitoring temperature of melting ice. (Year 5)

The following teacher makes explicit what for many teachers was implicit: the constraints on certain educationally valuable activities, when faced with a large class, can have negative consequences for learning.

Not doing enough practical/hands on work. One computer in the classroom (leads to) poor ICT skills. (Year 6)

In the next quotation, the teacher is even more explicit about how a large class hinders the teaching of science.

Difficulties in grouping increase with the size of the class, e.g. in science (to) use equipment, it's messy, so I have to choose very carefully. I do teacher demonstrations, but don't like doing them – it's not true to the nature of science. I can't do practical science every week with 35 pupils, so use a lot of class demonstrations, pupils are not actually doing it. There are 6 groups all wanting equipment at once. It would be chaotic in this small room if all in the class do practicals at once. (Year 6 large class – teacher interview)

And for the following teacher, who has a small classroom, practical activities in maths were also constrained.

The children are often affected by the lack of space in the room, e.g. practical maths has to be confined to non-movement. (28 pupils, in Year 5 –TQ)

In a similar way, teachers interviewed during the Year 5 case study visits all agreed that increasing the size of the class is likely to produce changes in the tasks given to pupils, with a decrease in the amount of practical work done, and an increase in paper and pencil tasks and teacher demonstrations.

Investigative work

Another type of activity that teachers found to be more difficult to set up in a large class is investigative work:

Very rigid regime established with 35 in the class; little time or resources available for the more investigative work, although several sessions are set aside each week for this. Would like to do even more. (Year 5)

Having over 30 children in Y5/Y6 means that physical space is limited. Opportunities for investigative work and experiments is restricted. (Year 6)

The main effect has been the necessary control mechanisms (in a large class) have limited the investigative and experiential teaching and therefore learning. It is a worry that children have excellent teaching not matched by the independent learning opportunities to enable them to put knowledge and understanding into practice. (Year 6 – headteacher questionnaire)

In contrast, teachers of small classes appeared less inhibited in setting up more ‘adventurous’ activities.

Smaller classes = less problems with resources therefore more adventurous teaching! (28 pupils, in Year 5 – TQ)

We see here one way that class size might have a negative effect on learning: larger classes can restrict the range of activities teachers can provide. More creative, adventurous, imaginative and innovative tasks can be more difficult in large classes, even though they help to broaden the curriculum beyond the narrow demands of the SATs, especially in Year 6.

Safety concerns

Another problem with a large class, which is also related to an accompanying lack of space (see below), is a concern with safety and control in the classroom, which in turn can have an impact on the types of tasks teachers selected. Larger numbers were more difficult to control and there is the potential for more accidents, particularly in a crowded room.

One teacher already considers her class too large to allow pupils to do Design and Technology, due to the safety issues. They all regret the ‘narrowing’ effect of larger numbers, with one teacher making less use of references to the wider world due to anxieties about control and safety. (Year 6 large class – case study report)

For some teachers the safety concerns with a larger class affected classroom management in some subjects.

In Technology, safety becomes more and more an issue. I split the class in half to control the dangers. (Year 6 large class – teacher interview)

Design and Technology safety would stop me doing some tasks. I would use the knives in a group (only) with me (there). Not enough room in ICT room for full class. Don't use the kitchen area as much because too many pupils. Design & Technology is pretty much squeezed out: we do it, but bare minimum we do it. (Year 6 large class – teacher interview)

Worksheets

Worksheets usually consist of a set of written questions or instructions on a printed sheet which children have to complete on their own. They usually demand individual work without accompanying teacher interaction (though they often follow teacher input) or collaboration with peers. Of course the use of worksheets will be influenced by teacher and school practices, independent of the size of the class, but one specific way that class size can affect teaching activities is through worksheets being given to pupils as a way of coping with large numbers.

We have always attempted to provide an inclusive education and therefore have a diverse and challenging teaching environment. With larger classes the staff are not as able to meet the needs of individual pupils which in turn creates stress and frustration. Staff work exceptionally hard to provide a high quality of teaching. However, there is a greater dependency on worksheets and lessons are very structured in order to keep all children on board. (Year 6 – headteacher questionnaire)

So here, despite a wish to provide an inclusive education and a high quality of teaching, a large class can mean teachers have to compromise and one way to keep all pupils engaged can be a reliance on structured lessons and the use of worksheets.

Class size, tasks and marking

We address the connection between class size and marking in [Chapter 8](#), but here we note that teachers reported that tasks were sometimes deliberately chosen by them to reduce the amount of marking and hence the time needed to complete it. Some commented that the quality of the marking with a large number of pupils could be adversely affected and therefore of less value to pupils.

35 in the class. Little physical space. Children can't move around the classroom easily. Too many for me to get to know properly. Too hard to give individual feedback from work. Marking takes too long – can't do it as thoroughly as I would like. (Year 6 large class – TQ)

In the next quotation, a teacher openly admits that they set tasks deliberately to limit the amount of marking, rather than for purely educational reasons.

For my own sanity I have to reduce their workload to reduce my marking. 136 books a day! (34, in Year 6 – teacher interview)

Here we see one logical effect of class size that is rather easily taken for granted. Having to look at this large number of texts day after day is a huge undertaking, and it is no wonder that teachers attempt to control the flow of work. This is clearly a reasonable survival strategy with a large class size, but it carries potentially negative implications for teaching and learning.

Having 37 in the class, I think twice about the work I plan for the children, such as practical activities. I also have to consider the quantity of work the children are given as the marking becomes unreasonable – if it is to have any real value. (37 pupils in Year 6 – teacher interview)

We pick up the issue of class size and marking in more detail in the next chapter, but here we note that regulation of the marking workload was an attempt, not only to cope, but also to protect the quality and value of the results of marking. Teachers properly saw marking as another vehicle for effective teaching, directed at the needs of each individual child, and revealing and providing support for misunderstandings and knowledge.

Marking, for a start and planning is just ... I find it difficult; I mean I know people say you don't have to mark stories, but I do, I mark them, and to mark 35 scripts is ... I find it very daunting, in fact it makes me exhausted at times, it takes me hours and hours to do and it's consistent, it's every day, every day. Now if I had to mark 40 scripts ... I think it would be physically impossible, because I like to make proper, constructive comments on it and even spellings, I like them to get it right. If they're going to copy some writing, I like it to be nice so that they can see it as it should be. (Year 6 large class – teacher interview)

If teachers with large classes become overwhelmed with marking, then its value is bound to be diminished, and consequently its potential as a strategy in helping individual pupils will be squandered. Curtailing marking, through the selection of tasks which generate little or none, runs the risk of reducing the value of the tasks, but, equally, marking which is superficial and without an element of feedback is also of limited value.

Space, time and resources

In this section we deal with three mediating factors that emerged from our analyses of themes in the relationship between class size and tasks and the curriculum. These three sub-themes seem to us at the heart of a more general understanding of how class size affects classroom processes and learning, and we return to them when we present the overall model in [Chapter 10](#).

Space

One needs to be careful in assuming an inevitable link between class size and the teacher's use of space. It was clear from the case studies that teachers could vary in their choices over how they make use of space available to them in the classroom.

The arrangement of the tables in all 10 classes [5 small and 5 large] is not just a reflection of class size, as three classes in each group have blocks and two have rows. In both groups, the teachers who have chosen to seat pupils in rows cite the same reasons, which are based on having tried other groupings and found rows to 'work best' for their particular class. How far this is a reflection of their own preferences and how far they have approached the question with an open mind, is impossible to say. However, it is not the case that larger classes lead inevitably to more 'formal/traditional' grouping of tables. (Year 5 – case study report)

But in general, it was clear that teachers in the case studies found that with larger classes space and shortage of resources became an issue, and this included considerations concerning safety and keeping control over a large number of pupils when engaged in using equipment and moving about. Rooms with a smaller number of pupils in them offered space which teachers could use flexibly, for example, to offer pupils alternatives

to sitting in one place all day doing desk-bound tasks. Teachers identified classroom space as a main factor in their choice of tasks and activities. It was a positive feature of a smaller class:

Children are (in smaller groups) allowed to know and understand their peers better. There are more opportunities for practical teamwork activities in smaller groups and community projects ... more easily managed. (Year 5 small class teacher)

Larger class sizes meant there was usually less space available and this often meant that the provision of areas being set aside for certain activities, common in many primary classrooms, could not be achieved.

No extra space for 'corners' in the classroom. (Year 6 large class – TQ)

The loss of a carpeted area where the whole class could combine for short sessions (common with younger primary pupils) was another consequence of a large class. But lack of space also affected other mainstream curriculum activities. One teacher reported that if she wanted to rearrange pupils and seating for particular curriculum activities, this took time away from teaching and learning and so she was reluctant to do it.

Because of the large class – space is at a premium. This has impacted on the curriculum. It has affected Technology, Science, Art in particular. Practical subjects have to have military style precision – not really conducive to creative exploration. Our classrooms are only 45 m² with 36/37 pupils. Y6s are big, so is the furniture they need - there is no room to swing a mouse let alone a cat! (Year 6 – headteacher questionnaire)

Teachers want to arrange the room to facilitate learning but can be constrained by the size of the class in relation to the size of the room. They then have to compromise:

There is little chance of flexibility as far as seating goes. It is not possible to have a proper class library area with cosy seating and displays of books, etc. Also, it would take time and trouble to organise an area large enough for children to sit on the floor, closer to the teacher for whole class sessions – in literacy, etc. Therefore,

the setup is rather formal for most of the time and some children find it difficult to sit at their desks for any length of time. (Year 5 large class – TQ)

All the Year 6 case study teachers agreed that they could make good use of more space if it were available. Various improvements to the classroom layout were identified, including breaking up larger blocks of tables and relocating computers and other items. With larger classes, furniture has to be put close together, some items may have to be relocated outside the room, the carpet area may have to be removed, as we have seen, or reduced. Two teachers with large classes remarked that the tables would have to be put into rows to facilitate movement.

30 is manageable – just! My room is very small so I can't arrange furniture and working areas best suited for maximum learning potential. (Year 5 – TQ)

In line with comments in [Chapter 4](#), a combination of class size and lack of space can also affect pupils' behaviour in class:

Many arguments in class – too many children working too close together. Find practical tasks a trial – sharing equipment. More children, therefore more problems with relationships. Cannot always support SEN children appropriately, as a large number of children take up more time in helping with [relationship] problems. (34 pupils, Year 5 – TQ)

This account of how class size and physical space interconnect is another illustration of how a focus on class size on its own in relation to pupil outcomes misses the way this works. Instead, we need to view the classroom as a distinct environment within which a large number of interacting factors operate – change one thing and others will be affected. As we see in more detail in [Chapter 10](#), the complex system we call a classroom is dynamic and involves a range of influences, all operating concurrently. The examples below illustrate this well:

Because of the high number of children in the class, every desk and chair is occupied and there is no room to provide children who have challenging behaviour or short concentration spans with individual tables. It would also be beneficial to have a separate art area with

tables in the classroom for small groups to work on at a time, but, again, this is not possible. I have had to have my desk removed from the classroom to fit all the tables for the children in. Resources have to be shared, sometimes between a group of 5 or 6, which is not satisfactory. Also, it is difficult to move around the room without asking children to move their chairs – this disrupts them working and causes problems. (Year 4 large class – TQ)

The children are often affected by the lack of space in the room. ... Cannot separate the children who are disruptive, so that they do not affect the others. (28 pupils, Year 5 – TQ)

Time

Time is another factor that emerged from teachers' experiences of the relationship between class size and tasks. One consequence of a smaller class was that teachers felt able to devote more time to planning and to teaching, and this was of benefit when seeking to match tasks to individuals. As we saw in [Chapter 4](#), teachers of small classes said they had the time to get to know their pupils well enough to be able to identify the needs of individuals, and the smaller numbers allowed teachers the opportunity to plan tasks accordingly.

Small numbers in a class: enables differentiation to be more effective – teachers will have from Level 3 to Level 5 to plan for as well as more severe SEN pupils, and gifted and talented. Enables teachers to maintain the breadth of curriculum we strive for in the foundation subjects – teachers have more time to plan and deliver the curriculum. (Year 6 – headteacher questionnaire)

Certain types of work set to pupils need to be assessed in process as well as in product and large numbers of pupil in the classroom made this problematic. To observe and assess pupil activities as they happen requires time for the teacher to pay close attention to what is being done and how. Lack of time and the necessity to carry out some tasks in groups, especially in large classes, can hamper such assessments.

... when children are working practically it's difficult to assess a child's ability and skill processes as group work is necessary due to constraints of resources. (Year 4 large class – TQ)

One of the factors, therefore, when considering class size and tasks and curriculum, is time. It is very time consuming to produce a variety of tasks for each curriculum subject, matched to the range of individual needs in a large class; much time can be spent after school hours, eating into the teachers' own time, and adversely affecting teachers' work/life balance. Added to the time for preparing such detailed and numerous tasks, is the heavy marking load which a large class generates (see above and also see [Chapter 8](#)). Compromises seem almost inevitable for teachers of large classes. We return in [Chapter 10](#) to the role of time in understanding class size effects.

Resources

Apart from space, another type of physical factor mentioned by teachers of large classes was resources, including textbooks, equipment and materials. Some teachers reported that the school purchase of a particular number of textbooks for each class was out of line with the actual numbers in the classes.

The class is not resourced for 35 children so even with sharing there are not enough books. This means I have to spend longer finding appropriate work in other schemes. (35 pupils, Year 5 – TQ)

This issue also covered computers, science equipment and materials for creative tasks in art and design and technology.

Lack of materials/equipment e.g. only 12 computers in suite. (34 pupils, Year 5 – TQ)

Where the lack of resources was significant, it meant teachers either resorted to setting tasks which did not rely on every pupil having access to resources or chose to manage the potentially disruptive sharing of resources. Combined with the lack of space, this shortage of resources was a main reason why teachers reduced practical, investigative and creative tasks (see above). Compounding the problems of space and resources were the worries about safety and class control, as we have seen. A possible consequence of large class sizes, therefore, is that lessons can become more formal, with pupils more static and having less opportunity for independent learning.

Children's desks arranged more formally. Teaching is more from the front and to the whole class rather than small groups. Teaching

is done by subjects rather than an integrated approach. (Year 4 – headteacher questionnaire)

Type and mix of pupils within the class

Another theme when considering the relationship between class size and tasks and curriculum is the ability/attainment range and composition of the class. Teachers and headteachers pointed out that larger numbers of pupils widened the range of needs, and the greater likelihood of having pupils with SEND in the class could also further extend the range. We deal in detail with class composition and class size in [Chapter 9](#), but here we show that a wide range of pupil attainment levels found in larger classes challenged teachers to plan tasks and support.

The following examples encapsulate the tension faced by teachers of large classes who are trying to meet these diverse learning needs while also trying to cope with the drive to cover the curriculum and meet targets. These needs are hard to achieve simultaneously.

As the class size increases: I think it's much harder to address all the ability levels of the class and constructively teach to the curriculum, I mean the curriculum's very heavy as it is and trying to be inclusive of everybody in the class, becomes impossible. (Year 6 small class – teacher interview)

As we shall see in [Chapter 9](#), the issue of differentiation emerges as one of the most pressing consequences of increasing both class size and, in result, the diversity of pupils in the class. The larger the number of pupils, the wider the range of learning and the harder it is to differentiate tasks. This constrains teachers' choices and can push teachers into adopting approaches that make differentiation difficult and meeting the learning needs of all pupils less likely.

We examine differentiation in more detail in [Chapter 9](#) but here we note that an analysis of the process of differentiation brings together class size, the composition of the class and coverage of the curriculum and types of activities. Teachers and headteachers in the study revealed their awareness of this, as the quotations below illustrate.

As our pupils progress through Key Stage 2 the range of ability widens, making the teaching of a subject more complex, if effective differentiated activities are to be provided. The situation is made more complex with the full range of curriculum demands. (Year 4 – headteacher questionnaire)

With huge differentiation, finding suitable activities for all pupils so they can have equal access to the curriculum is very difficult. How can you fully teach to pupils at really low levels and those reaching the highest levels? There is too much content in the curriculum to do any pupil justice. (Year 5 – TQ)

It is clearly an expectation that all teachers will differentiate tasks, regardless of class size, but responses from headteachers and teachers show that small classes made it much easier to match tasks to needs. Teachers had the time to identify each pupil's needs more accurately and the time to prepare differentiated tasks to match them.

Differentiated tasks and teaching methods

As we saw in [Chapter 4](#), teachers of larger classes saw the use of whole class teaching as one unwanted solution to the problem of having so many pupils. It was seen by some teachers as leading to a less differentiated curriculum, ill-suited to the individual pupil's needs. This was candidly admitted by some:

Having 30+ children in a class is only a part of the problem affecting teaching. The wide range of abilities, attitudes, aptitudes or behaviour is an equal problem as is the curriculum overload and the pressure to raise [attainment] for SATs. A large class means more class teaching and less genuine differentiation. Teaching is decided on the 'average' and more able or less able children do not make the progress of which they are capable. (Year 6 – headteacher questionnaire)

Small classes allowed teachers to maintain small groups, and these were seen by some teachers as useful as a context for teaching. The tasks worked on could be more focused on the group's attainment and needs.

Small groups, giving more individual attention from the teacher, pupils more on-task. Pupils able to move around the classroom freely from activity to activity in a more relaxed environment. (Year 5 small class – TQ)

Differentiation is much easier to organise because it's more convenient to divide children into smaller groups based on ability. (Year 4 small class – TQ)

The case studies in large classes indicated how difficult it was for teachers to differentiate teaching and tasks. In one Year 6 large class the day was formal, with class-based, abstract exercises, very similar throughout. Few attempts were made to match the work to pupils, and this clearly did not suit the needs of some individual pupils.

On the other hand, smaller numbers meant more time was available and therefore there was more possibility of more targeted planning of differentiated tasks to match an individual pupil's learning needs more effectively.

The small Y6 teaching group means that work is tailored much more to children's individual needs. The teacher is able to give more one-to-one time with individuals. She still plans and prepares differentiated activities ... (Year 6 – headteacher questionnaire)

Teachers interviewed during the Year 5 case study visits all agreed that the particular pupils included in a larger class were a very important factor. With reliable, trustworthy pupils it might be possible to continue with the same level of practical opportunities as a smaller class, but this might well be difficult with more difficult and badly behaved pupils.

Conclusions

Results in this chapter are summarised in the **Key Themes** box below. For completion, and in order to be consistent with the corresponding area of [Figure 10.1](#) we also represent the background, contextual features of the curriculum and assessment arrangements, described at the beginning of this chapter.

Key Themes
Context: Curriculum/assessment arrangements
Teaching: Tasks and curriculum activities
<ul style="list-style-type: none">• Curriculum• Tasks• Space, time and resources• Type and mix of pupils

The curriculum and tasks

This chapter relied to a large extent on the reported experiences of teachers and other staff in schools. Teachers are privileged informants on the kinds of activities their pupils experience, not least because they usually prepare and manage them, but we need, as discussed elsewhere, to be cautious about strong claims about the effect of class size without supporting evidence from other forms of data collection. The results summarised here should therefore be treated as suggestive rather than definitive and, as with other areas covered in this book, there is a clear need for further research.

The evidence presented in this chapter indicates that though the curriculum coverage does not change much as the class size increases, the impact of the curriculum is 'diluted', as one teacher put it, with more pupils to monitor and support. Classroom tasks on the other hand seem more likely to change in relation to class size, in terms of the types of activities the teacher sets up, and the kind of teacher support for them.

The curriculum may therefore be largely 'a given' but the teacher remains responsible for selecting tasks and teaching approaches which meet the needs of all the pupils in their class. Compromise is an unavoidable aspect of teaching, but teachers' experiences suggest it is particularly prevalent in a large class.

We have seen that a larger class can make it more difficult to set activities which teachers feel are educationally valuable, including practical work and more investigative and sustained activities. Larger classes can mean more likelihood of a restricted range of teaching approaches, as the teachers juggled resources, space, class control and the learning needs of all their pupils. It is likely that activities like investigative work will encourage deeper levels of knowledge and conceptualisation, and so it is concerning if these kinds of activities are found less often in larger classes. Once again, though, this suggestion needs further confirmation from other forms of data collection.

Interconnectedness

We said at the start of this chapter that results concerning class size and the curriculum and tasks brought out the reality of the interconnectedness of classroom factors at work. As with so much else when considering class size effects, the relationship with class size and types of activities overlaps with other factors, in particular space and time, resources and

materials, and types of pupils in the class. We have seen how the factors are interrelated, and we cannot separate them easily from each other. Looking at associations between separate factors may work for analytical purposes but to fully capture how the classroom works we look to capture their full interconnectedness and interdependence. We develop this theme more explicitly in [Chapter 10](#).

Class size and tasks and curriculum: Pedagogical implications

We have seen in this chapter that differentiation of pupil tasks, to match the learning needs of all the individuals in the class, is perhaps the greatest challenge facing the teacher of a large class. This is especially difficult when the class contains pupils with SEND, as we see in more detail in [Chapter 9](#), because it extends still further the range of pupil needs and attainment levels within the class. Pedagogical issues and strategies therefore need to be considered when working through how best to adapt the setting up of tasks in classes of different sizes.

One way of considering the pedagogical implications is in terms of the three interactive contexts for learning seen in other chapters in this book – that is, to the whole class, groups and individuals. We have already discussed the issues regarding whole class teaching. We just add here that where whole class teaching is done – and of course this form of teaching will be necessary for many purposes – it needs to be carefully considered and not become a way of teaching simply dictated by the sheer number of pupils in the class.

As discussed in [Chapter 4](#), one of the key problems in a large class is the difficulty of providing individualisation of teaching, to which we can add individualisation of tasks and activities (see [Chapter 9](#) for more on different forms of differentiation). One solution we suggested at the end of [Chapters 4](#) and [5](#) is relevant here as well, namely, to think through more carefully the positive possibilities of group-based teaching and task allocation. As we saw in [Chapter 5](#), pupils are often allocated to groups but there is less evidence of carefully worked through pedagogical strategies for teaching to these groups. This strategy also provides a degree of differentiation, but not one forever frustrated because individual support is not possible for all in a large class, while whole class teaching is found to be unsatisfying because it is hard to provide any real form of differentiated teaching.

We have seen that teachers can come to rely on worksheets as one form of task allocation with large classes. Worksheets can have a role to play in teaching, of course, and are one vehicle for differentiation, but

they need to be allocated sparingly and strategically. Otherwise, they can become uninteresting for pupils, and simply used to fill time while the teacher is occupied elsewhere.

One of the main things we have seen in this chapter is the problem teachers can have when setting up certain kinds of tasks, particularly practical activities, in large classes. When allocating practical tasks, one strategy in the face of potential worries about danger and resourcing, is to ‘stagger’ practical tasks with groups so that all pupils get to do them at some point. The rest of the class can be doing independent tasks as the teacher works on practical tasks with groups.

This last point leads to a more general strategy which can help with the management of large classes. Teachers, and indeed the school leadership team, should be doing all they can to encourage independent learning. Many would no doubt say they already do this but, in our experience, it can be rather implicit. A more formal approach is required so that when teachers are working with groups or individuals around certain tasks the rest of the class can be working independently – or collaboratively – on other tasks. This approach to pupil independence, as early and as much as possible, allows teachers more freedom to give attention to individuals and groups. We have found that this is facilitated by initiatives such as the SPRinG collaborative group work programme, as described in [Chapters 5 and 6](#).

We have seen above troubling accounts of how teachers decided not to put on some ostensibly valuable tasks because of worries about the heavy demands of marking. It needs to be recognised that the bigger issue here concerns class size and teacher workloads and marking policies in schools. It seems clear that alternative solutions need to be sought, as we discuss in more detail in the next chapter, though we repeat here a point raised in [Chapter 4](#): one strategy is to conduct more ‘live’ marking in class, so it reduces the amount of out-of-class marking.

There is also a particular and positive role for TAs here. Although we consider TAs in more detail in [Chapter 9](#) with regard to pupils with SEND, we mention here a couple of ways TAs can be used to help with tasks in the classroom. Some teachers in large classes, as we have seen, avoid certain labour-intensive activities like practical and investigative activities; one strategy is to deploy TAs to help manage such tasks. To avoid the negative consequences of routine ways of deploying TAs, discussed in [Chapter 9](#) and in Blatchford et al. (2012), such deployment should be designed to complement and support the teacher and not, as is often the case, substitute for the teacher. TAs can help reduce dangers and disruptive behaviour during practical tasks and allow a more varied

diet of work. The TA can also take on other roles, for example, a ‘roving’ role to supplement the more targeted support given by the teacher to certain groups and their activities. Differentiation of tasks can be managed more easily with a TA.

It is recognised that even with careful attention to the suggestions here, there are still likely to be inherent problems for teachers with large classes. One overriding issue is the curriculum which, as discussed above, is not easily adapted. The work for this chapter suggests to us that current discussions in the UK about the curriculum content need to be conducted not in a policy vacuum, but mindful of the realities of classroom life and the everyday difficulties teachers face, especially in covering the curriculum when faced with large classes and a range of attainment levels in their class. This book has shown how all facets of classroom life are interdependent, and the curriculum is no exception. We come back to policy issues arising from our work in [Chapter 11](#).

8

Class size and classroom processes: Administrative aspects of teaching

In the last chapter we extended our analysis of class size and classroom processes by adding tasks and the curriculum. We now add one final classroom process. As well as aspects of teaching, often realised or enacted through interactions with pupils, there are also a number of more administrative aspects of the role, including assessments of pupil work, marking work, record keeping and planning for lessons. In this chapter we present our findings on the relationship between these administrative aspects of teaching and class size.

It seems to us that the administrative consequences of larger classes are all too easily taken for granted and have not received the attention they deserve. To preview what is clear from the results presented in this chapter: a large class can put enormous administrative burdens on teachers, and this can in turn adversely affect their morale and their teaching.

Research on class size and administrative aspects of teaching

As far as we know, the connection between class size and administrative aspects of teaching has not been studied in any detail before. Even Cahen et al. (1983), in their otherwise wide-ranging examination of class size and teaching, do not include administrative aspects in their summary of the three main processes affected by class size.

Looking back over the extensive publications that we published from the KS1 (5–7 years) stage of the class size project (CSPAR) (for example, Blatchford et al. 2003a and b) shows that we also had little to say about the administrative consequences of class size, focusing much more on the interactive aspects of teaching. This may reflect an unintended omission on our part, or it may be that the administrative aspects of teaching are more prevalent as children move beyond the earlier years of schooling. It is also likely that the administrative burdens on teaching have increased over time – this is probably something with which teachers will agree. A UK YouGov survey reported in November 2018 asked nearly 1000 teachers to highlight up to three areas which caused them stress (Neale 2018). The most common answer was the workload resulting from marking (60 per cent), followed by changing education policy (42 per cent) and the Ofsted inspection regime (40 per cent). If it is the case – as seems likely – that larger classes add to marking loads, then it follows from this survey at least that class size is involved in increasing teachers’ stress.

Berliner and Glass, two senior US educationalists, provide a powerful rebuttal of, in their view, 50 myths and lies that threaten America’s Public Schools (Berliner and Glass 2014). They take on what they classify as Myth 17 – the view that class size does not matter and that reducing class sizes will not result in more learning. They make the point that the debate over class size in many ways ‘can be better understood from the perspective of teacher workload’ (Berliner and Glass 2014, 90) and, of direct relevance for this chapter, say that with a larger class there are added burdens and responsibilities, including assessments of children’s learning and tests and essays, the creation of lesson plans, monitoring student progress, and attending parent–teacher consultations. They make the strong point that: ‘The more students a teacher is responsible for, the greater the demand on the teacher’s time in school, and this inevitably impacts his or her life outside school’ (90).

In this chapter we look at whether class size adds to the amount of marking and assessment. There is a huge literature on assessment in its many guises, and we do not have the space to deal with it here. In general terms there has been much debate about the value of assessment done outside the lesson and the immediate context of instruction, compared to assessments as part of the lesson, offering more immediate feedback to students. Broadly speaking there is agreement that the latter, more

formative form of assessment, is more likely to aid pupils' understanding and learning. Black and Wiliam (2009) (also, Wiliam 2011) have written widely on assessment and have been concerned with the way some forms of assessment are an unprofitable use of teacher's time. They point out that we tend to place too much emphasis on the grading function of evaluation and too little on its role in helping pupils to learn. We think the results in this chapter have important implications for assessment practices in schools, and we return to this at the end of the chapter.

Drawing on the responses from teachers themselves, we therefore describe in detail the way class size affects administrative aspects in terms of marking/assessment, reports and planning. Our general expectation was that extra children in the class would add to administrative burdens for teachers, but it is fair to say that we did not appreciate just how heavy the burden had become, from the teacher's perspective, nor how significant the administrative aspects of teaching seem to be in seeking to understand class size effects.

Results on class size and administrative aspects of teaching

There were three main types of analyses conducted for this chapter. The first came from the analysis of TQ responses to the question about class size and teaching, as discussed in [Chapter 4](#). As we said there, we moved to this chapter those answers that were categorised as being about the administrative side of teaching – marking, assessment and record keeping.

The second form of analyses collated headteachers' and teachers' questionnaire responses to two questions about their perceptions of any links between class size and assessment, and class size and record keeping.

Third, additional data came from the questionnaire surveys in which a question was included which asked for 'any further comments'. There were numerous responses, and those making reference to assessment and record keeping were analysed for this chapter.

In addition, the case study teacher interviews included questions about stress and enthusiasm, and some responses to these cited issues connected to assessment, marking and record keeping.

Each of these forms of data collection were analysed in terms of main themes and examination of the main commonalities across all forms of data collection highlighted three main themes:

1. Marking/assessments
2. Paperwork/reports
3. Planning/preparing, for example, lessons/target setting

Unless stated otherwise, the quotations below are from teachers with classes of 30 pupils or more in Years 4 to 6.

Marking/assessments

We first look at responses from teachers to the open question in the KS2 TQ question on class size and teaching (see [Chapter 4](#)). As outlined above, this chapter addresses the analysis of those responses relating to administrative aspects of teaching.

The most frequent of the subcategories of administrative burdens concerns marking and assessment. Quoting verbatim from the responses one can sense the cry of anguish from teachers who feel that a large class of over 30 pupils means their marking load is too heavy and in consequence they are forced to make compromises.

Too many children ... Too heavy a marking load, that is, 32 × maths, 32 × literacy, 32 × other subject/s per night. (Year 4)

... it is difficult to ensure depth of learning for all the children – many are having to finish at home or during breaks. The marking and feedback generated by this creates a massive workload for evenings and weekends, especially the marking of so many science books and writing books. (Year 5)

Having 32 books per subject to mark is quite daunting and exhausting! (Year 5)

The large number of pupils has made marking arduous, and individual feedback very time consuming. (Year 6)

Worryingly, the problems of marking with a large class can in turn affect the quality of both the feedback given to individual students and, as

we saw in the previous chapter, the nature and quality of the work the teacher sets the pupils.

I began the year with 34 children in the class. ... – to mark, let alone assess 3 pieces of work from each child each day is difficult (although obviously I use self-marking and priority marking) – and writing lengthy (4 page) reports on each child is a nightmare. (Year 5)

It takes a long time to mark homework (3 hours' worth per week) and extended writing. It means I do a lot of whole class marking/discussing answers and then check their work quickly later. I try to mark one piece of writing in depth every couple of weeks but can run out of time. (Year 5)

This increase in marking with a large class can mean there are negative consequences for other aspects of teaching.

The marking load has meant less time for preparation of differentiated work. (Year 5)

We now report on other sources of data, namely, headteachers' and teachers' questionnaire (TQ) responses on the two questions about their perceptions of any link between class size and assessment; references to assessment from further questions which asked for 'any further comments'; and responses in case study teacher interview questions about stress and enthusiasm.

Responses in the TQ showed that there were two different contexts for pupil assessments: in class during lessons and out of class, often done at home in the evenings and weekends.

Looking first at within-class assessments, large classes created problems for teachers when they attempted to carry them out in lessons. They faced a dilemma – whether to shorten each assessment and maintain the frequency, or to keep the time for each assessment unchanged and reduce the number or amount carried out per pupil.

Obviously, a smaller class would be better in terms of workload and the time spent with individual children. Larger classes are much more demanding on time ... (Year 4)

The teachers' responses revealed their feelings of dissatisfaction, as they felt pushed into the use of less than ideal strategies for assessing pupils' work.

Assessments take time – there is only a limited amount available – therefore the time spent on each pupil is reduced. I would prefer to spend longer on each child. (Year 4)

In the previous chapter on tasks and curriculum we saw that class size could adversely affect the provision of practical activities. There was also the accompanying difficulty of assessing children in practical activities:

Summative assessment has been unaffected. However, to assess skills and practical work has been difficult with so many children. Most practical activity lessons occur in the afternoon when I'm alone with 35 children, so to observe carefully takes time and means I can't cover as much assessment as usual. (Year 4)

Practical activities in science and IT need to be observed by teachers, as they proceed, in order to assess pupils' skills and understanding. Likewise, ongoing processes in maths, geography and music are also important for pupils to carry out and for teachers to assess, since they reveal learning needs.

I strongly believe that smaller KS2 classes would have a positive effect on teaching and learning at KS2. The obvious reasons are improved practice with regard to daily assessment and therefore better target setting for individuals. (Year 5)

This type of formative assessment was clearly viewed by teachers as vital to their attempts to meet the learning needs of every individual. It also shows how the processes discussed in this and the last chapter are interconnected. In the teachers' minds, a direct link exists between the quantity and quality of their in-class assessments and their preparation of well-matched tasks for use in subsequent lessons and the setting of targets for individuals. From their point of view, weakening the formative assessments in any of the ways reported above, threatened the quality of their lesson preparation.

In Key Stage 2 a class teacher endeavours to acquaint herself/himself with the pupils as individuals, getting to know the 'whole'

child and making appropriate assessments on their progress at the end of the year. This is difficult enough with classes of 28 or 30 children but with over 30 children in a class it is inevitable that teachers' time is spread too thinly. It's more difficult to get to know your pupils. (Teacher with 32 pupils in class)

Obviously, smaller classes give – increased adult:pupil contact; more precision targeted teaching; lighter workload, e.g. Assessment ... (Primary headteacher)

There was for some a trade-off between assessments and teaching:

Obviously if you have a large class you either do less assessments per child or do less teaching while doing a set number of assessments. (Year 4 teacher)

In line with what we saw in [Chapter 4](#), teachers reported feeling that they knew and understood their pupils less well in a large class and this had the effect of adversely affecting the matching of tasks they prepared for them, because of what they felt was an inadequate assessment of attainments and needs. A smaller class, on the other hand, allowed them more time per pupil and a more strategic approach to assessment, as we see in the two following comments from teachers with class sizes of 25 or less.

To me it seems obvious that the smaller the class the more time each child will receive in individual support from the class teacher. It also helps the teacher assess children more easily and plan their future learning.

A smaller class size undoubtedly releases more time for detailed assessment to inform future planning – individual responses from children can be gleaned and misconceptions rectified in greater depth.

Turning now to out-of-class assessments, headteachers and teachers were conscious of the impact large classes had on teachers' workload after lessons had finished:

Comparing having a class of 30 last year and 35 this year has made a great difference in all aspects. I am too tired due to extra marking

and preparation. 5 extra children completing at least 4 pieces of work a day means 20 or more pieces to mark at the end of a very tiring day. (Year 4 teacher)

Just as the in-class assessment was seen as building up a picture of a pupil's learning successes and needs, so the same view was taken of marking out of class. Marking helps the teacher see what has been achieved and, just as importantly, what has not been understood, learned, remembered and applied.

Overall presentation is greatly improved in smaller classes because time to make comment and pursue better standards in this area. Marking is also not such a daunting task and it can be done in much greater detail. (Year 4 teacher)

A large class almost inevitably generates more marking. For the marking to be valuable to pupils and teachers alike, it has to be done with care and with formative intentions in mind. Such marking is very time consuming and teachers and headteachers reported how stressful and tiring it was to deal with the work of large classes.

Having started this year with a class of 35 and reducing after Christmas to 30, I have noticed a considerable change not only with resources, but the extra marking made quite a difference to my time. (Year 4 teacher)

Some headteachers felt that tiredness and a lack of 'work/life balance' were damaging the work of their teachers and large classes were seen as a main reason for the problem. This is because large quantities of marking at night and at weekends could undermine teachers' morale and threaten their effectiveness in the classroom.

Marking is a nightmare for large classes. Paperwork implications e.g. assessment files, SEN files, etc. make me want to find an alternative job to that of teaching large classes. (Year 4 teacher)

The amount of marking I have had to do this year has been overwhelming (plus) having to then plan the next day's activities on top of this. (Teacher of 35)

Young children need above all to be listened to. I regret very much that some details it would be useful to know have taken ages to find out about. I am far tireder this year than last year because evening marking has meant I rarely get to bed before midnight and I hardly ever see my friends. (Teacher of 34)

Last year with 33 Year 5/6 I was exhausted most nights. This year with 22 I am only exhausted Wednesday, Thursday and Friday nights! (Teacher of 22)

If the marking is done superficially, it adversely affects the link between the assessment of each pupil's needs and the preparation of well-matched tasks, differentiated to meet those learning needs.

Marking of work in a large class especially for demanding subjects like English can lead to less quality marking. (Year 6 – headteacher questionnaire)

The volume of marking and record keeping increases with both size of class and the ability of the children. The work presented by KS2 children requires close, regular scrutiny for it to be purposeful for the development of children. Staff need to be able to manage their workload to suit the ability of the children, therefore I feel the KS2 teachers require either smaller classes or greater periods of non-contact to enable effective marking. (Teacher of 29)

Paperwork/reports

Many times we heard from teachers that although they are committed to – and love – teaching, the increases over time in administrative burdens, like writing reports on individual pupils, have become more onerous, and were affecting their commitment to teaching. It's a simple matter of logic, though also realised experientially in the accounts from teachers, that as class size goes up so does the number of these reports and the amount of other written documentation on pupils. As with marking, the extra burdens can have negative consequences on other aspects of teaching, as well as teachers' own well-being.

Here are responses from teachers with large classes to the question in the TQ about class size and teaching:

The classroom is crowded ... Additional time taken to write reports adds to tiredness. (Year 4)

All of our classes are 30/29 and they have been this size for many years. I have taught classes of 24 at A ... many years ago and this made a difference. ... fewer reports/records to keep and quality of time with children is better. (Year 4)

Writing individual programmes onerous – at least 2 hours extra work. (Year 5)

... report writing take(s) an enormous amount of time to complete. (Year 5)

Turning now to the other sources of data (that is, headteachers' and teachers' responses in the questionnaires asking for their views on class size and record keeping, the question which asked for 'any further comments' and the case study teacher interviews) we found that teachers are obliged to complete record keeping which could often be lengthy and time consuming, and that this increased with the size of the class.

More children: more work, increased amount of time needed to assess and report, more marking and filling in forms and marksheets. More reporting (3 x yearly – 2 x for parents evenings because of setting for maths, English and science. (Teacher of 31)

Some teachers had clearly developed little belief in the worth of this laborious work, implying that it was bureaucratic and contributed little or nothing to the education of the pupils in their classes. One can sense the disillusionment in the two following quotations.

I am leaving teaching after 31 years to go on supply because the pressure of paperwork, endless planning and record keeping, etc., etc. (Year 4 teacher of 30)

I should be planning the forthcoming weeks lessons, which I feel I will teach better if fewer children turn up and half the curriculum is removed with no SATs in 3 weeks (over 2 age groups for me) followed by Reports which no-one really reads or understands. (Year 5 teacher of 34)

Smaller classes = Less pointless paperwork. (Year 6 teacher)

The most frequent response from Year 4 teachers referred to the record keeping for large classes being 'more time consuming' and more than two-thirds reported that having large classes had affected their record keeping.

Obviously the larger the class the more time is spent on marking, assessments, record keeping and writing reports. (Year 4 teacher)

Some teachers admitted that they resorted to briefer records, which they knew would not be so useful later:

It takes much longer! As marking so many pieces of work takes so long it means filling in records has to be done in a briefer way. Much work in record keeping has been done at home at weekends and late into the night – after other marking has been completed and preparation for the next day done. (Year 4 teacher)

It takes a long time to record, so I only record essential details which can be unclear when I look back. (Year 4 teacher)

One tends to rush over records as there are so many, that is 36 reports. (Year 4 teacher of 36)

In addition, some teachers remarked that because there were so many demands on them in a large class, they did not use their records as much as they should for their planning:

Record systems become almost impossible to manage and therefore do not have a valuable influence on planning for future development. (Year 4 teacher of large class)

Very time consuming with a large number of children (35 in maths) – no time to use them usefully as an assessment tool. (Year 4 teacher)

Record keeping is much more easily applied to a smaller class and therefore becomes much more valuable to inform teaching decisions which ensure the progression of the child. Less paperwork

means more quality teaching time can be devoted to the individual needs of the children. (Year 4 teacher)

In UK primary schools there is very little non-teaching time in the school day and hence most record keeping was done out of class, after lessons and at home in the evenings and weekends.

Pupil progress reports for example took me an average of 2 hours per pupil – it's hard enough to find an extra 60 hours for the normal 30 children, but how does one find more than that? – Answers on a postcard please to....! (Teacher of 31)

Time – it is difficult to spend enough time really getting to know exactly what the children do know in order to update records. (Year 4 teacher)

The fact that large classes demanded so much more time added to some teachers' negative feelings, not helped by the sense that this was not time well spent, so far as their pupils' learning was concerned.

Large classes mean lots more paperwork, marking, e.g. reports, assessments. You are not able to give as much time to teaching the children due to continuous workload. (Teacher of 27)

Large class sizes and poor funding are making the teaching role almost impossible. I have 100 books to mark each night (not one or two lines but pages!) and in addition I have my planning and record keeping. I want more time to 'teach' – that's what I trained as a teacher for. I'm sorry that it is rushed – time is limited! (Year 6 teacher of 32)

Planning/preparing – for example, lessons/target setting

An allied administrative task affected by class size is the everyday planning and preparation for teaching. Again, this is rather too easily overlooked by those who feel that class size is unimportant; it is yet another illustration of how there is more to teaching than simply delivering a presentation or interacting with pupils.

Here are some responses from the TQ question on class size and teaching, all from teachers with classes larger than 30:

Mixed year group, 9 special needs, very little help, huge amounts of marking, planning, preparation for different ability groups. No release time for any of this. (Year 4)

Time spent marking instead of preparation for future lessons. (Year 5)

Less time spent on planning ... more of this work taken home as a lot more time spent on marking. (Year 5)

Great stress! ... Cannot keep up with target setting and assessment records/tasks. (Year 5)

As there are 36 children I do find it hard to spend quality time with individuals. ... There is less time to set individual targets, to discuss these and their work with them. (Year 5)

Contrast the above with this response from a Year 5 teacher with a small class:

Having only 19 children enables me to teach and plan!

The other sources of data indicated that with smaller classes, teachers could spend less time marking and had more time and energy to devote to careful planning of subsequent lessons.

I have worked in a school with classes of less than 20 before (for 2 years). I felt that children greatly benefited from the extra attention they could receive. Furthermore, the reduced record keeping/assessment/marketing meant I actually had adequate time to prepare and deliver consistently decent lessons. Also significant, were the reduced 'out of class' demands, which I feel greatly helped my own teaching practice and hence children's learning. (Teacher of 29)

Too much to do and too little professional time to do it in puts a strain upon the staff. As a result, in order to survive some lessons must suffer through rushed preparation. We rely heavily upon the 'goodwill' of the workforce who spend many hours making sure that the quality of lessons planning is high. (Year 6 headteacher survey)

Conclusions

Key Themes

Teaching: Administrative

- Marking/assessment
- Reports
- Planning

In this chapter we have looked at the relationship between class size and what we have called the administrative side of teaching. The **Key Themes** box above summarises the three main subcategories. We argue that the administrative aspects of teaching can be taken for granted but can be a particular burden for teachers in the UK, with its heavy emphasis on regular assessments and individual reports. It seems very clear from the majority of teachers we have heard from or spoken with that as the numbers of pupils in a class increase, the more demanding becomes marking, assessments and report writing. The accounts from teachers show how much these extra demands can have a negative impact on their teaching, well-being and satisfaction with their job.

The connection is a logical one of quantity: the size of the class determines how much school work teachers have to read, assess and give feedback on. With 30 or more pupils and, say, three subjects to be assessed, this can amount to over 90 books to address, perhaps in one session – a very time-consuming task! As we discuss below, it might be possible to conceive of alternative ways of handling feedback on student work, for example, in groups or by pupils themselves, but as things stand it is difficult to see how the numbers of pupils in a class can increase without also meaning more marking, assessments, reports etc. – a point seemingly overlooked by those who argue that class size is not important.

The results presented in this chapter are largely dependent on the views of teachers in schools. While their evidence is important in developing insights into administrative responsibilities, and the effect they have on teachers, the teachers' views on the links to class size, though instructive, cannot be taken as conclusive without more research. The findings are, though, consistent with the strong argument of Berliner and Glass (2014), which we discussed earlier in this chapter, that the debate over class size in many ways is best understood from the perspective of teacher workload. Very much in line with the results in this chapter, they argue that with a larger class there are added burdens

on real-time assessments of children's learning, student assessments in terms of tests and essays, creating lesson plans, monitoring student progress and attending parent–teacher consultations.

The results in this chapter can be seen alongside the results from the UK YouGov poll reported earlier in this chapter. This shows that marking is the main factor causing teachers stress, and if we are right that larger classes add to the marking load then we can directly implicate class size in increasing teachers' stress.

One thing to emerge from this chapter is therefore a strong suggestion that the effects of class size can be seen to operate in areas of classroom life away from the pupil academic test scores which are the usual measure of how class size effects are assessed. It seems that class size can indirectly affect pupils through effects on teachers, in particular in terms of teachers' morale and stress, but also more directly affect pupils, for example, through the types of tasks set to pupils. This adds to our explanation for the second of our class size conundrums (CSC2).

We have no exact test of this claim, but it seems to us likely that the excessive administrative demands resulting from a large class may be one contributory factor in the relatively low retention rate of teachers and high levels of teacher dissatisfaction in the UK. Again this is in agreement with Berliner and Glass who argue that with larger class sizes: 'Teachers are less likely to remain in the profession, leading to higher rates of turnover by experienced teachers and, in the end, fewer highly trained, qualified, and experienced teachers in schools educating our nation's children.' (2014, 90–91). If correct, then here is another important outcome of class size, not captured in pupil test scores.

Interconnectedness

By now the reader will be very aware of the point we make at the end of each chapter concerning the interconnectedness of class size and classroom processes. In this chapter we have seen that when we look in detail at how class size affects one factor – here the administrative aspects of teaching – we also see an overlap with other processes at the same time. Perhaps the two most obvious overlapping factors in the case of administrative aspects of teaching are differentiation and individualisation. Both rely heavily on teachers providing the kind of individual support, planning and instruction they feel is essential, but which is so hard to provide effectively with large numbers of pupils. Marking, assessments, record keeping and planning are essential to high-quality differentiation and individualisation, but it seems clear this is more

difficult with more pupils. We see again how understanding how class size effects work requires an understanding of the interconnected nature of classroom processes.

Class size and administrative aspects of teaching: Pedagogical implications

In this chapter we have seen repeatedly that a large class can add to the amount of marking, assessment and record keeping. We believe the situation is troubling and it is important to think about what steps can be taken to help. If it is the case that class sizes and the curriculum are 'givens' and difficult to change, then it seems to us we need to go back to basics and ask fundamental questions about the purpose and need for marking, assessments and record keeping.

As we said earlier in the chapter, there has been a general debate about the value of assessment done outside the lesson and the context of instruction, compared to assessments as part of the lesson, offering more immediate feedback to students, and in general there is agreement that the latter, more formative form of assessment, is more likely to aid pupils' learning. Araceli Ruiz-Primo (2011) argued that effective feedback should help students to attend to the quality of what they have produced, and enable them to monitor themselves during their work. Wiliam (2011) makes the point that we tend to place too much emphasis on the grading function of evaluation and too little on its role in helping pupils to learn. Wiliam cites Crooks (1988) to make the point that an over-emphasis on the grading function can actually be counter-productive, because it can lead to a reduction in pupil motivation and self-efficacy, especially for weaker students, as well as a reduced use and effectiveness of feedback to improved learning.

The research literature therefore leans towards the view that marking pupil 'products', after the event, has limited formative value for the pupils. It may help teachers to identify the learning needs of individuals and for them to use this to help in planning subsequent lessons, tasks and approaches, but potentially more valuable formative assessment opportunities arise in the moment by moment informal interactions between teachers and their pupils. The benefit of a more informal interactive and formative assessment approach is the chance it affords for immediate, focused, detailed feedback which pupils see in context and which relates more directly to what they had written, said or done. Feedback which is delivered a day or more later is that much harder to use effectively to monitor pupils' learning and to develop it.

Concerns about the excessive workloads resulting from large classes may therefore force us to rethink the type of assessments and record keeping common in schools, which teachers with large classes struggle with. Paul Black (2007) has shown how whole school change is needed. As suggested in Webster et al. (2016), with regard to the use of TAs in schools, one starting point would be to conduct a school level 'audit' of the existing record keeping, assessments and marking that takes place, and for this to then be examined critically by a group of teachers within the school, who then report to the school leadership for possible change in practice and policy. Sometimes it helps to take a fresh and overarching look at everyday practice. So schools can ask: Why are we marking this pupil product? What use will be made of the grades we award? Does it have any value for the pupils, or is it just an administrative task? What can we do to bring the processes of pupil learning, the assessment of their work and the formative feedback to those pupils, closer together in time and space? Taking stacks of books home does not seem to be the correct answer to those questions.

We have witnessed this fundamental rethink in action in one primary school where a rethink of National Curriculum levels of attainment acted as the spur to go back and ask the kind of questions set out above. Three specific questions formed the starting point of work in this school:

- What is the purpose of the marking?
- What impact does it have on pupils' learning?
- What impact does it have on teachers' workload?

The conclusion was that verbal feedback, to individuals and groups in the process of carrying out a task, was more valuable to the pupils, helping them to reflect on their work and make changes where necessary. At the same time, this reduced the teachers' workload. In addition, record keeping was reduced to termly teacher assessments against two criteria, using the school database to store the information. Pupils books have no grades or marks.

Echoing the comment by Paul Black above, the staff at this school needed to be trained to abandon the summative assessment model and move to this radically different approach. The whole school was involved in the change, and naturally some teachers found the change easier than others. It is the school policy that teachers do not take books home to mark. Significantly, discussions with pupils conducted by the school

have shown that the ‘new’ approach is preferred by them and seen as more useful and helpful.

Given this example, we suggest a rebalancing from summative to in-class formative forms of assessment may be one way of approaching the problems of large class sizes, while at the same time introducing more effective pedagogical practices. Another school we are in touch with has written a comprehensive school policy on marking. Readers may also be interested in a recent helpful report on reducing teacher workload by Richardson et al. (2018) which summarises initiatives in schools designed to reduce teacher workloads, including marking and assessments. Drawing on the findings and evidence from the Independent Teacher Workload Review Group Report *Eliminating unnecessary workload around marking* (2016), the University of Oxford/Education Endowment Foundation report *A marked Improvement* (Elliott et al. 2016) and Hattie’s work on feedback from *Visible Learning into Action* (Hattie et al. 2016), the report covers a trial of six different approaches to reduce marking workload within 16 schools over an average of one term. The approaches used were: Marking in the Moment; Visible Learning into Action; Minimal Marking; Self-Assessment; Symbols; and Marking Conferences.

Such initiatives are welcome, although the overarching problem is unlikely to be adequately handled by the actions of individual teachers or schools. It seems to be an area where a more general initiative is required. Unfortunately, with the decline of support from the traditional middle level tier of local authorities in England, which provided a valuable source of expert guidance, it often falls to individual schools to work out a strategy, or the responsibility passes to other more recently created, but more fragmented, middle tier structures like multi-academy trusts. One wonders whether a more government-led initiative is required. At the time of writing, recognition of the effects of excessive workloads on teacher retention prompted one Education minister to suggest a reduction in the number of emails to teachers. Though no doubt well meant, we can see from the teachers’ experiences as expressed in this chapter that this is going to do little more than scratch the surface of what is required.

It seems likely that attention to how assessments, marking and record keeping are dealt with in other countries would be valuable, though it needs to be remembered that the OECD figures reported in [Chapter 1](#) indicate that most OECD countries have smaller primary class sizes than in the UK.

But any change to assessment practices is at best only a partial solution to the problems teachers have as a result of large class sizes. It seems clear that a class size of over 30 will inevitably lead to excessive administrative demands, which we have argued are not factored into the common view that class size is not important.

Class size and differences between pupils, particularly those with SEND

We have already said that an interesting thing about the classroom is that it contains many children to one or perhaps two adults. But an additional factor is that there are often large differences between these children in terms of their personalities, their motivation, their behaviour and their levels of attainment and readiness for learning. The factors that have caused this variation are outside the scope of this book but will include the children's previous schooling, their socio-economic background and the attitudes and support given by their parents. The basic point of this chapter is that this variation is an important factor when seeking to understand the effects of class size.

It was not our original intention to have a separate chapter on types of pupils, but it became increasingly apparent when examining the various forms of data available to us from the CSPAR KS2 study – the TQ transcripts, the case studies and the systematic observation data – as well as in subsequent studies, including the MAST and SENSE projects – that a main theme was emerging relating to how the effects of class size were connected to the types and characteristics of the pupils in the class, and in particular those with SEND (special educational needs and disabilities). As we shall see, differences between pupils, along with class size, are key facets of the classroom context with consequences for classroom teaching but, in addition, class size effects differ for different kinds of pupils. This chapter sits apart from [Chapters 4 to 8](#), in that it is not directly about a type of classroom process, but more about the connections between class size and the types of pupils, which will in turn affect classroom processes like teaching and classroom management. It

is therefore supplementary to the other chapters but in our view remains vital in order to fully appreciate how class size works.

In this chapter we bring together the separate strands of data which bear on class size and different kinds of pupils. We organise the chapter in terms of two main headings: first, differences between pupils in general and then, second, a focus specifically on pupils with SEND.

Class size, types of pupils and challenges for teaching

First, we look at how the type of pupils in the class have implications for teaching, and how this is affected by class size. We concentrate in particular on differences in academic levels because, as we shall see, this is a main factor for teachers, and affects classroom management. To repeat a point made earlier: if all children were at a similar level of attainment then the effect of class size might not be so obvious because teachers would find it much easier to use the same teaching methods, materials and curriculum activities for all children in the class. But we shall see ample evidence that a large class can present particular challenges for differentiating work for pupils working at different levels, and we argue that this is a major factor when seeking to understand the effect of class size.

The combined effect of diversity in class composition, the presence of pupils with SEND and a large class size brings into sharp focus a concept that has emerged before, but which is of particular relevance in this chapter: differentiation. Differentiation will always be needed in teaching, to a greater or lesser extent, but the large variation between pupils, more likely with a relatively large class size, means that this becomes a key issue for teachers. There is a more pressing need to adopt strategies for differentiating between pupils, in terms of teaching and the curriculum.

Class size and pupils with SEND

There has always been variation between pupils to one degree or another, but what is different more recently, in England and Wales at least, is the way that policies of inclusion have meant that there are more pupils with SEND in mainstream schools. Since the 1980s in the UK, the number of children and young people with SEND educated in mainstream UK schools has greatly increased. The 1981 Education Act gave legal weight to the recommendations of the Warnock inquiry

into SEND (Warnock 1978), and also introduced a system of statutory assessment for pupils in England with the highest levels of need. Until recently, the level of SEND was indicated by three categories which can be considered as a scale from less to more severe: 1. 'School Action' – requiring provision different from, and additional to, other pupils; 2. 'School Action Plus' – also receiving help from sources external to the school; 3. 'Statemented' – with more severe or complex needs that require exceptional provision. With the recent Code of Practice, introduced in 2014, Statements were replaced with Education and Health Care Plans (EHCPs). In 2016, 236,805 pupils had a Statement or EHCP, equal to 2.8 per cent of the total pupil population.

The outlook for such pupils is troubling. It has been estimated that pupils with SEND are nine times more likely to receive a school exclusion, seven times less likely to find paid employment, twice as likely to live in poverty, and four times more likely to have mental health problems (O'Brien 2016). Government data shows that pupils with a Statement for SEND in primary and secondary schools are twice as likely to be eligible for free school meals as pupils without SEND (DCSF 2009). The Cambridge Primary Review concluded that 'there is an urgency about providing educational and social support for particular children in difficulty ...' (Alexander 2010). School failure, for example, in terms of leaving compulsory education without qualifications, or having inadequate literacy and numeracy skills, is known to have long-term damaging effects on society, as well as for the individuals concerned (Feinstein et al. 2008).

There is nothing new about a concern with the education of pupils with learning and behavioural difficulties. There has, for example, been a good deal of interest in appropriate pedagogies for pupils with SEND (Gersten and Edwards Santoro 2007) and on school policies of inclusion and school leadership (Ainscow 2007). But we argue that the successful education of pupils with SEND is affected by the everyday classroom contexts within which they spend their school days, and that this is often neglected.

There is a common aspiration to ensure that all pupils receive a high-quality education with opportunities to learn; in many countries there are policies of inclusion in which pupils with SEND are, as far as possible, educated in mainstream schools. This is an admirable aim, but it can result in difficult decisions regarding classroom organisation and classroom management, and a central theme of this chapter is that these become more problematic with larger class sizes.

Turning from classroom management to the pupils themselves, it seems likely that pupils with SEND will be particularly affected by the

size of the class. One of the justifications of small classes is the hope that it will help those with most ground to make up academically to receive more individual attention and be better able to concentrate. Conversely, a problem with large classes might be the adverse effect on the levels of classroom engagement of pupils. This might be particularly apparent in the case of pupils with SEND, who may already have difficulties with attention and retention and may benefit from more individual attention.

In this chapter, we look at class size and pupils with SEND in three ways: (1) Descriptive studies of everyday classroom experiences of pupils with SEND; (2) Does class size differentially affect the behaviour and interactions of pupils with SEND?; and (3) Class size and SEND: challenges for teaching – differentiation and teaching assistants.

Descriptive studies of everyday classroom experiences of pupils with SEND

In order to understand class size effects it seems to us important to obtain moment by moment information on pupils' experiences of classroom contexts and classroom interactions. Unfortunately, there is surprisingly little systematic research available on fundamental aspects of the classroom support in place for pupils with SEND. One of the most authoritative sources available, *The SAGE Handbook of Special Education*, contained comprehensive coverage of 40 papers from experts in special education from the UK and USA (Florian 2007), but does not have any systematic descriptive information on their classroom experiences.

We present results from two of our observation studies, which we believe together provide valuable information on the day to day classroom contexts, classroom interactions and class sizes experienced by pupils with SEND. A feature of both studies is a comparison of pupils with and without SEND. The questions we asked are: Who supports these pupils – teachers or TAs? Where is the support provided – in the classroom or outside? What kinds of interactions take place with teachers, other adults and classmates – as a whole class, in a group or 1 to 1? Does the size of class vary for pupils with SEND versus typically developing pupils?

Does class size differentially affect the behaviour and interactions of pupils with SEND?

In [Chapter 3](#) we looked at the way that class size affected pupil behaviour and interactions in the classroom and we saw that it was low-attaining

pupils who seemed to suffer more in larger classes in terms of more off-task behaviour and teachers' critical comments. In this chapter we extend this analysis by conducting a similar analysis to see whether there are differences in class size effects on the behaviour and interactions for pupils with different levels of SEND. A key reason for this focus on pupils with SEND is our expectation that they are particularly affected by class size.

Class size and SEND: Challenges for teaching – differentiation and teaching assistants

In the third section we concentrate specifically on the implications of class size for the teaching of pupils with SEND. We have seen that teachers can struggle with a large class to provide the degree of differentiation and individual attention needed to deal with different levels of attainment in the class. If there are pupils with special needs in the class, this is likely to add to the differentiation required.

Since the early-to-mid 1990s, there has been a phenomenal growth in classroom- or pupil-based support staff. These adults are known in different countries by different names: 'teaching assistant', 'classroom assistant' and 'learning support assistant' are common in the UK; 'para-professional' and 'paraeducator' in the United States; and 'teacher aide' in Australia and New Zealand. In line with the UK Government, in this book, we use the generic term teaching assistant (TA) to cover these equivalent roles.

An international survey also reports a general increase in TAs employed in schools in the United States, Australia, Italy, Sweden, Canada, Finland, Germany, Hong Kong, Iceland, Ireland, Malta and South Africa (Giangreco and Doyle 2007). We are also aware of increases in the use of TAs in New Zealand. But the growth and numbers of TAs seem most pronounced in the UK. To add to what we said earlier, the latest government figures show that in 2018 TAs comprised over a quarter (28 per cent) of the total school workforce in state schools in England, and over half of all support staff (teachers 48 per cent, TAs 28 per cent, other support staff 24 per cent). TAs are therefore a sizeable part of the school workforce. Figures are taken from DfE School workforce data for 2018 (DfE 2019).

One principal reason for the growth in the number of TAs worldwide is the way inclusion into mainstream schools has become the favoured means of educating children with special educational needs and disabilities. TAs are integral to this process (Blatchford et al. 2012).

In this chapter we therefore look at the role of TAs in the education of pupils with SEND. We draw on data from the CSPAR KS2 study, most commonly used in this book, as well as the observation components of the MAST and SENSE projects and from the earlier DISS project.

Results on class size and differences between types of pupils in the class

Class size, types of pupils and challenges for teaching

As we have seen in previous chapters, in the KS2 stage of the CSPAR study we carried out an extensive national questionnaire survey of teachers. As detailed in [Chapter 4](#), questionnaires were sent out when the pupils were in Years 4 (8–9 years), 5 (9–10) and 6 (10–11) and covered a number of questions connected to the teachers' experiences of class size. In [Chapter 4](#) we looked at answers to the question on class size and teaching. As previously remarked, several themes that were identified seemed more appropriately placed in later chapters and we have moved to this chapter the section on those TQ responses which showed that the type of pupils in the class are important when considering the effect of class size.

This analysis showed that teachers were clear that differences between pupils, usually in terms of attainment level, were an important factor in how class size affects teaching. The basic problem, expressed many times, was that it is difficult to cover all children's teaching needs in a large class when there is a wide range of attainment levels.

Main problem is the wide ability range – I have children from level 2 in maths and English up to level 5. Differentiation and whole class sessions are really difficult. Also, I don't have time to focus on each child enough (I've no classroom assistants) and the children in the middle groups miss out most. (Year 5 teacher)

We can see in this response an extension to the by now familiar point about how a large class means less individual attention. In a large class there is also likely to be a wide ability range, and this makes it even more difficult to find time for individual pupils. Classroom management of teaching and learning can be experienced as difficult because differentiation is difficult, and whole class teaching is not a viable alternative. For the teacher just quoted, the need to meet the most obvious needs of

the low-attaining and higher-attaining pupils means that it is the ‘middle groups’ who miss out the most.

However, more teachers with large classes feel that it is difficult to adequately cater for both extremes of the academic distribution – that is, high- and low-attaining pupils, and especially those with SEND. This can be seen in the following responses from teachers with large class sizes, with teachers unable to find time to stretch the more able or spend time going over teaching points with the lower-attaining pupils.

Less able not given enough one to one teaching. (Year 4)

We have two classes in Y4 each with 35 children. For literacy we split into 3 ability groups making smaller groups which help to monitor children’s progress. In all other lessons I have 35 children, so it is difficult to help the less able and stretch the more able all the time. (Year 4)

Not a problem with middle band but highest plus lower achievers do not fulfil potential, because of time constraints on teachers. (Year 6)

I find I have less time to talk to children about their work and end up teaching to the middle. As a result both extremes of the ability spectrum become more disaffected. All this leads to the fact that the more able child takes charge and gets on with it whilst a less able child sits back and doesn’t achieve as much. (Year 6)

The next teacher makes direct reference to the way a larger class necessarily means a wider range of abilities, with negative consequences for teaching:

Because of the greater number of children the ability levels seem to be wider, therefore you feel that you are not stretching the brighter ones or giving enough time and support to the less able ones. ... You also have less time to spend with each individual child. You can’t arrange groups in the way that you want because of the lack of space. (Year 6)

Some teachers felt the more able pupils in particular missed out in a large class:

There is a large spread of ability, especially in Maths, and it is difficult to give sufficient time each week (quality time) to all the children. The top group of children are penalised in favour of the poorer, struggling children. (Year 5)

As I have a class of mixed ability ranging from a borderline statement to top 1 percentile it is difficult to give sufficient quality time each week to all the children. In particular my top maths group are not getting the time they need because those who are struggling are taking up so much time. (Year 5)

The most able tend to be the ones who lose out the most. The least able always receive extra support. (Year 6)

Differentiation

A separate code used to analyse answers to the TQ question on class size and teaching captured responses where differentiation was explicitly mentioned by teachers. Differentiation in a broad sense underpinned many comments from teachers. Reading through the TQ responses makes it clear that teachers in a large class face problems in adequately differentiating teaching and work for the resulting diversity of pupils within the class. Differentiation is most obviously required when there are pupils with very different levels of attainment. It is simply not possible for the whole class to engage with the same level of work.

Here we provide some selected illustrative quotations from the TQ responses to convey something of the difficulties of providing differentiation in large classes and how it is easier and more effective in smaller classes.

Having so many children (36) obviously affects their learning as I cannot always give each of them the attention they need. Teaching to such a wide range of abilities (e.g. I have children working on Year 3, 4, 5 and 6 numeracy) is also hard as I cannot focus on a particular aspect as much as I would like as everything is not always relevant for all the class. (Year 4)

Having 10 less in the morning has greatly improved the environment in the classroom. I am able to provide a more focused lesson according to ability and accommodate for individual needs. (Year 5)

The following comment shows that class size has implications for differentiation in that it tends to mean the teacher differentiates at the group level, rather than being specific to an individual.

I would like to spend more time focusing on more able/less able individuals, but with a large class I feel it is virtually impossible to do this. Work is differentiated for groups of children, rather than individuals. (Year 5)

We look in more detail below at results concerning differentiation and pupils with SEND.

Pupils with SEND and class size

Descriptive studies of everyday classroom experiences of pupils with SEND

We next look at the observation results from the DISS study – this is the study that was the basis for results in [Chapters 3](#) and [4](#), when we looked at class size in relation to classroom engagement and teacher–pupil interaction. In this section we look at just one feature of the descriptive results – the amount of interactions pupils with SEND have with teachers versus with TAs. In this section we are not concerned with class size as such, though we think the results set a useful context for interpreting later results, specifically concerning class size. The methods used are described in [Chapters 3](#) and [4](#). The results were striking.

[Table 9.1](#) shows a summary of the amount of contact teachers and TAs had with pupils with different levels of SEND, expressed as percentages of all observations across all age levels in which they interacted with adults. We can see that teachers tended to spend most of their time interacting with pupils without SEND, followed by pupils with milder forms of SEND (School Action), and lastly pupils with the higher levels of SEND (School Action Plus and Statements). TAs, on the other hand, spent most of their time with pupils who had the highest levels of SEND, followed by milder forms of SEND and least frequently with pupils without SEND. The amount of interaction teachers had with children therefore decreased with level of SEND, while the amount of interaction TAs had with children increased with level of SEND. What is more, in a separate analysis, not shown in the table (see [Blatchford et al. 2012](#)), we found that the more interactions an individual pupil had with a TA, the less that pupil interacted with their teacher. TAs therefore provide an *alternative* form of support to the teacher and are not additional to the

teacher, as is sometimes claimed. Moreover, it is children in most need who tend to be supported by TAs, and it is therefore they who miss out more on teacher support. This seems to us an important finding.

A fuller account of these results can be found in Blatchford et al. (2012).

Table 9.1: Which pupils are supported by teachers and TAs?

	Non-SEND	School Action	School Action Plus and SEN stated	Total % (number of observations)
Teachers	55%	24%	21%	100% (15,845)
TAs	27%	32%	41%	100% (2,363)

Source: Blatchford et al., 2012.

We now extend this analysis of the classroom experiences of pupils with SEND, and how they compare with typically developing pupils, by turning to the extensive and detailed observation data from the MAST and SENSE studies. As described in Chapter 2, and in Blatchford and Webster (2018), in the first phase of data collection (the MAST study), observations were made of 48 pupils with SEND who were in Year 5; in the second phase of data collection (the SENSE study), observations were made of 49 pupils with SEND who were in Year 9.

Observations were also collected on comparison pupils. We observed a sample of typically developing pupils, average in the class in terms of their academic attainment, in order to provide a point of reference for the results on the pupils with SEND. Observations were collected on 151 control pupils in Year 5: 115 boys and 36 girls. Observations in Year 9 were collected on 112 control pupils, again matched by gender with the SEND sample: 83 boys and 29 girls.

In order to provide a comprehensive view of the behaviour and interactions of pupils with and without SEND, in primary and secondary schools, we drew together observation data from both the MAST and SENSE studies. The resulting dataset totalled 67,928 observations in all.

This analysis does not refer to class size (which we come to later) but is, we believe, helpful here in that it provides a clear story about how the classroom experiences of pupils with and without SEND can differ widely, even when the pupils are in the same school and classrooms.

The results are structured around the idea of three ‘social modes’ (we introduced this idea in Chapter 4): first, pupils interacting with adults (teachers or TAs); second, pupils interacting with their classmates; and third, not interacting with anybody. These three categories cover all

instances of a child's behaviour in classrooms and are mutually exclusive (only one can be coded in a time interval). In addition, the adult-pupil interaction social mode is further divided into whether these interactions involved teachers or TAs, and, further still, whether each of these types of interaction occurred as part of the whole class, part of a group or on a one-to-one basis. For both year groups we compare pupils with SEND with average-attaining comparison pupils. The observations of comparison pupils only took place in the classrooms (these pupils are not routinely withdrawn from lessons), but observations for pupils with Statements/EHCPs were divided into whether the location occurred in classroom or outside the classroom (there were a few observations where the child was in a unit – often called 'Additional Resource Provision' – attached to the school).

So what did we find? First, with regard to where children were situated, at Year 5 a substantial minority of observations on pupils with SEND occurred away from the classroom (27 per cent), often because pupils were taken out for support in reading or maths. In contrast, the vast bulk of observations at Year 9 took place in the classroom (96 per cent versus 4 per cent out of class), and, in this respect, were similar to average-attaining pupils.

At Year 5, pupils with SEND spent about 30 per cent of all interactions with the teacher and a sizeable and similar number of interactions with TAs (27 per cent of all observations). This differs markedly from typical pupils, who spent far less time with TAs (only 2 per cent of all observations) but rather more time with teachers than pupils with SEND (40 versus 31 per cent). One can see clearly here how, at primary level, pupils with SEND are far more likely than their classmates to be in interaction with a TA (13 times as much!) and have correspondingly fewer interactions with the teacher.

Looking in more detail at the interactive context, for Year 5 pupils with SEND, interactions with the TA tend to be one-to-one (19 per cent of the 27 per cent), rather than part of a group or the class, while the bulk of the interactions average-attaining pupils have with their teachers are as part of the class (23 per cent of 31 per cent).

Moving on to secondary schools, at Year 9, pupils with SEND have proportionately more interactions with the teacher than at primary level (43 per cent of all observations versus 31 per cent at Year 5) and somewhat fewer interactions with TAs (18 per cent versus 27 per cent at Year 5), though the number of interactions with TAs is still substantially in excess of average-attaining pupils, who interact with TAs in only 1 per cent of all observations. It seems that TAs are still a constant presence for

secondary pupils with SEND but do not have any role in the classroom life of typical pupils.

Of the other two social modes (interacting with peers and not interacting), perhaps the most marked and interesting results concern the amount of peer interaction. Pupils with SEND are much less likely to interact with their peers compared to average pupils (at primary the difference is 18 per cent versus 32 per cent and at secondary it is 16 per cent versus 27 per cent). It seems as if the higher number of interactions with TAs is accompanied by fewer interactions with peers.

These results lead us to argue that there is a high degree of separation of pupils with SEND in mainstream schools – separation from their teachers, from their classmates and, connected to these two, separation from the classroom itself.

It is also our contention, though it can't be proven from these results, that class size has a lot to do with this situation. The problems teachers have in adequately dealing with the wide range of attainment levels, and in particular pupils with SEND, means there is a reliance on TAs and time spent out of the classroom in various forms of intervention. We come back to class size and the deployment of TAs with pupils with SEND in the last main section of these results.

Having looked at the overall way pupils spent their time with teachers, TAs, pupils and not interacting, we now move on to consider whether class sizes differed for pupils with SEND versus comparison pupils. We use the systematic observation data from the MAST and SENSE studies. In [Table 9.2](#) we have set out the class size data for comparison pupils and those with Statements/EHCPs in Year 5 alongside comparable data for Year 9 pupils. In Year 5, all pupils tended to be in the classroom and so the class size is the same for both groups of pupils, while at Year 9 class sizes could vary because the pupils were often in different sets.

The clear finding is that in primary schools, average-attaining pupils and pupils with Statements/EHCPs were most often taught together in larger classes, within the range of 21 to 28 pupils (66 per cent of observations). Just over one in five pupils at Year 5 (21 per cent) were taught in classes of 29 or over. By contrast, in Year 9, comparison pupils were taught in classes in the range of 21 to 28 pupils for 56 per cent of observations, and only 13 per cent were in classes of 29 or over. Pupils with Statements/EHCPs at Year 9 were taught in the smallest classes – 23 per cent within the range of 21 to 28 pupils and only 3 per cent of observations in classes of 29 or over. By contrast, pupils with

Statements/EHCPs were most often in smaller classes of 20 or less – 74 per cent or 3 in 4 of observations.

So pupils with special needs are taught in larger classes at primary level (and this takes into account those times they were taught outside the classroom, most likely in smaller groups or individually). This is a strange state of affairs, from a pedagogical point of view, and we return to it later.

Table 9.2: Comparison of class sizes for pupils with and without SEND (MAST and SENSE data).

Class size	Year 5		Year 9		Year 9	
	All pupils*		Comparison group		Statement group	
<4	0	0%	0	0%	33	1%
5–8	0	0%	0	0%	451	9%
9–12	26	1%	0	0%	1,325	28%
13–16	55	2%	124	11%	853	18%
17–20	303	10%	222	20%	838	18%
21–24	841	29%	245	22%	730	15%
25–28	1,092	37%	386	34%	384	8%
29–32	415	14%	147	13%	147	3%
33+	217	7%	0	0%	0	0%
Total	2,949	100%	1,124	100%	4,761	100%

*In Year 5, class size is the same for both Comparison and Statement groups (Blatchford and Webster 2018).

We have seen that when the children were in secondary schools they tended to be taught in ‘sets’ for most subjects, that is, classes organised on the basis of similar attainment level. For the Year 9 data we were able to look separately and in more detail at whether the different attainment sets varied in their size for average-attaining pupils and pupils with SEND. As would be expected, average-attaining pupils tended to be taught in average-attainment classes within the range of 17 to 28 pupils (76 per cent of observations). In contrast, the size of the classes in which pupils with Statements/EHCPs were taught tended to be much smaller. In the clear majority of observations (77 per cent), the low-attainment classes in which pupils with SEND were taught comprised 16 or fewer pupils. In just over half of cases (55 per cent), these pupils were in classes of 12 or fewer pupils.

So, to sum up these comparisons of pupils with SEND versus typically developing pupils, taken from the MAST and SENSE studies

and from results from the DISS study on interactions with TAs versus teachers, we have found that pupils with SEND spend more time at primary out of the classroom, more time with TAs, and less time with classmates, when compared with average-attaining peers. Overall, pupils at primary level have larger class sizes than at secondary, and pupils with SEND at secondary level spend more time than average-attaining pupils in smaller attainment-set classes.

Does class size differentially affect the behaviour and interactions of pupils with SEND?

We saw in [Chapter 3](#) when we looked at observation results from the DISS study that there was an overall tendency for there to be more on-task and less off-task behaviour from pupils as class sizes decreased and, conversely, less on-task and more off-task behaviour as class sizes increased. We also saw in [Chapter 4](#) that there was less individual attention in larger classes. In [Chapter 3](#) we looked at whether the relationship between class size and on- and off-task behaviour varied for pupils with different attainment levels, and in [Chapter 4](#) we examined whether the relationship between class size and teacher–pupil interactions varied by attainment level. In short, we found that in larger classes the lower-attaining pupils were more likely to show more off-task behaviour and receive more critical comments from teachers.

We now look at the same data but change the focus from attainment level to level of SEND. The basic logic of this analysis was to see whether the effects of class size on pupil behaviour and interactions differed in terms of pupils' level of SEND. In contrast to the results for class size, attainment level and behaviour and interactions, these results have never been published before. In line with what has already been said, for the purposes of statistical analysis there were three groups of pupils: no SEND – 319 (55 per cent), School Action – 141 (24 per cent) and School Action Plus/Statement – 125 (22 per cent). These last two categories represent mild and more severe forms of SEND, respectively.

The observation method was described in [Chapters 2, 3 and 4](#). In brief, systematic observations were carried out in 49 mainstream schools, 27 primary schools and 22 secondary schools. Two year groups were generally observed in each school, either Year 1 and Year 3 (5–6 and 7–8 years) or Year 7 and Year 10 (11–12 and 14–15 years). Observations were conducted on 686 pupils in maths, English and science, in 88 classes. There were 34,420 10-second observation points in total.

As we saw earlier, we also recorded the class size at the time of each observation (what we have called the ‘experienced’ class size) because this is the classroom contextual unit most likely to be connected to moment by moment classroom interactions and pupil engagement in lessons. The observation categories were the same as those used in [Chapters 3 and 4](#).

This observation study employed a naturalistic, non-experimental design and so associations cannot be taken strictly as evidence of causal direction. Nevertheless, in analyses of the relationship between class size and observation measures we controlled for possibly confounding factors, such as pupil-attainment level, gender, and the presence of a TA, and there was no evidence that these accounted for effects found.

We look first at findings on teacher–pupil interactions. We saw in [Chapter 4](#) that as class size increased there were fewer times when a pupil was the focus of a teacher’s attention and fewer active interactions with the teacher. The converse also applied – as class sizes became smaller there were more times when a pupil was the focus of a teacher’s attention, and more times when they were engaged in active interaction with teachers. This effect was found for all groups at both primary and secondary levels.

In contrast to the results for attainment level, there was no evidence that the relationship between class size and individual attention and active contributions was more marked for pupils with SEND. However, we also make the point that the relationship between class size and individual attention is very likely to have more significance for those with SEND. They will often need more individual attention than their peers in order to follow instructions and receive feedback on their work in class.

The relationship between class size and the total amount of teaching, that is, talk dealing with the substantive nature of a task, through explaining or questioning etc., varied for the three levels of SEND. For those with the highest level of SEND (School Action Plus/ Statemented group) there was a decrease in the overall amount of teaching with increased pupil numbers at secondary level. So those pupils with the highest level of need in mainstream secondary schools are alone in receiving less overall teaching from the teacher as class size increases. Put simply, the larger the class size the less the overall quantity of teaching for those in most need.

Furthermore, we also found an effect of class size on teachers’ efforts to deal with negative behaviour. As we have said, this category was coded when teachers had to correct the child being observed or a group within which the target child was situated, for example, when the

teacher perceived them to be off-task and misbehaving. We found that the effect of class size on this was affected by pupils' level of SEND. There was no clear trend at primary level but at secondary level the children with SEND and School Action Plus (together, the highest level of SEND) received more of this kind of corrective behaviour as class size increased.

Taking these results together, we see that as class size increases children in most need in secondary schools experience less overall teaching, and more negative controlling comments from the teacher, along with less individual attention (as other pupils). This seems worrying.

The other main set of results from this analysis of the DISS observation data concerned classroom engagement. It will be remembered from [Chapter 3](#) that the clearest result was at primary level, where we found a general tendency for the amount of on-task behaviour to decrease and off-task behaviour to increase with increasing class size. In contrast to the results for attainment level (as reported in [Chapter 3](#)), we found no clear evidence that the relationships between class size and classroom engagement differed by level of SEND.

Readers might worry that there is likely to be an overlap between attainment level and level of SEND. Indeed this is the case: a high percentage of children with SEND are also likely to be low-attainers. However, the statistical analyses of the effect of class size on child behaviour and interaction, for different levels of attainment level, used in this study took account, statistically, for the effect of SEND. In the same way, the analysis of the effect of class size on pupil behaviour, for different levels of SEND, also took account of the effect of attainment level. Results therefore show the *independent* effect of each factor on pupil behaviour and interactions. Results from both analyses show a fairly consistent picture: as class size increases it is the lower-attaining pupils who are most likely to be disengaged in class, and lower-attaining pupils and those with SEND experience less teaching overall and most corrective talk from teachers. It is therefore the already most disadvantaged pupils – those in most need – who seem to be most negatively affected as class size increases.

Class size and SEND: Challenges for teaching – differentiation and TAs

Having examined the systematic observation results on pupils with SEND, in this final section we look specifically at the pedagogical issues related to class size and the presence of pupils with SEND. We do this by extending the discussion above on the practitioner experience of class

size and diversity, by looking at teachers' experiences of teaching pupils with SEND.

We saw above that teachers in the TQ and the case studies found problems in a larger class with teaching both ends of the attainment distribution. The most commonly mentioned problem, however, was catering in the class for children with SEND.

For the first teacher quoted below the number of pupils with behaviour difficulties means two problems: they impact on the rest of the class and they also require more attention from the teacher.

Reasonable sized class for whole class and group teaching. But high level of children on SEN register (16/28) both for EBD (emotional and behavioural difficulties) and for academic underachievement have caused me to be stretched. (Fewer) pupils would have been more manageable considering the high level of EBD pupils. EBD pupils severely impact upon the class and demand high teacher input. I would be delighted to teach 40 pupils in a class as long as no one was SEN for behaviour difficulties. (Year 5)

For teachers a small class is essential for the provision of high-quality teaching for children with special needs:

Within the class (of 30) there is a wide range of ability and it is often difficult to give each child the time and support they require. There are also two children with behavioural difficulties who require a lot of attention and time, and on occasion have to be removed from the classroom. Whilst supporting these children and children with learning difficulties, there are times when the able and more able children work independently when given a set task without further input from the class teacher. (Year 4)

I have taught a class of 35 children in Year 6 and found it easier than my present class of mixed Years 3 and 4. This I feel is due to having 6 children with behavioural difficulties (of which 5 also have learning difficulties) plus a further 6 with SEN. (Year 4)

Children with SEND were perceived to be vulnerable to a lack of teacher time and attention when classes are large:

It is very difficult to get around and see on a one to one basis each child when you have a class above 25. Children with learning

difficulties and slow learners do not get a fair deal, especially if they receive little or no additional support. (Year 4)

A main problem for teachers was that because a large amount of time and attention needs to be devoted to children with special needs, the rest of the class can be neglected as a result. This process is exacerbated as class size increases.

It should have been a pleasure as I think 26 is an almost ideal number. However, the inclusion of a special needs child with ADHD and violent behavioural problems has made it feel as if I'm coping with a class of 40. I think my teaching has been affected – adversely, and so has my health. (Year 5)

The pedagogical issues connected to class size and teaching pupils with SEND were further explored in the CSPAR KS2 case studies. As we have seen, case studies involving interviews with key staff and classroom observations were conducted on a sub-sample of small (25 pupils or less) or large (31 pupils or more) classes in Years 5 and 6. The case studies revealed the same management problems for teachers as identified in the questionnaire survey. Teachers in large classes felt that the needs of pupils with SEND were less well met as the class size increased, and this had much to do with the lack of time which they could devote to working with individuals. Once again, this was affected by the number of pupils with SEND; the more there were in a class, the more difficult the teacher's job became and the less the pupils' needs were met by the teacher.

I think the larger the class, either the teacher will be tempted to put more support into the SEN and therefore almost ignore other children, or it could also be that the SEN don't get the support they require because the teacher obviously is taken up with the other children in the class.

TAs interviewed in the case studies had a similar view. They felt that a larger class meant there was less time for giving everyone the support they needed and that attention to more pupils with SEND would have a negative effect on the learning of the whole class.

The role of TAs. We have seen from the observation results earlier in this chapter that pupils with SEND in mainstream schools spend much more time than their classmates with TAs. In line with this, a recurring

theme from TQ answers and case study interviews is the way that the deployment of TAs is seen as vital for the education of pupils with SEND when there is a large class.

34/35 is manageable and teaching assistant is available. Enhanced teaching assistant level for a class of 34/35 is more beneficial than reducing class size to 30 and reducing assistance available. (Year 4 – headteacher questionnaire)

TAs were a valuable resource for many teachers, helping them to reduce what were seen as the damaging effects of a large class. The TA was able to help differentiate work and provide interventions in maths and English. Teachers were overwhelmingly positive about TAs, with some caveats:

It is helpful having someone else [TA] to work with a group and for the children to turn to. However, standards differ to mine and sometimes I feel it creates more noise and fuss than necessary. There is an extra meeting and timetable to draw up. The children who benefit most are the small groups she takes out during registration and assemblies to do spelling and reading practice. (Year 5 large class – TQ)

The general view of teachers is that TAs are especially needed to help with pupils with SEND in large classes, either when used for in-class support or taking pupils out of the classroom for interventions. In both cases the TA took charge of the pupil or pupils with SEND while the teacher spent time with the rest of the class.

TA is superb, particularly helping me in maths and literacy. She also supports least able special needs. Has helped with particularly messy art/DT and when class go on trips. (Year 5 large class – TQ)

Began the year with 28 children. Numbers increased to 30. Children have come and gone all year and now we are back to 28 (different children!). In January we employed a classroom assistant, and this has made a huge difference. This particular class has a large number of SEN children and therefore an extra pair of trained hands has impacted on the quality of input. This has enabled me to ‘teach’ instead of dealing with behaviour issues constantly. The differentiation/ability within the class is a huge problem and

having a classroom assistant alleviates some of the problems this brings. (Year 6)

These quotations are very consistent with results in the DISS project (Blatchford et al. 2012) and at first glance this seems like a sensible arrangement and a useful division of labour. It allows the teacher to focus on the majority of pupils in the class, while still ensuring that pupils in need have individual attention. However, as we have argued extensively elsewhere (for example, Blatchford et al. 2012) this arrangement is often counterproductive because it can mean children in need do not receive expert teaching, they can become separated from everyday classroom life, and there is a risk of becoming dependent on the TA.

In line with this concern, reservations were voiced by some staff in schools. Here is a TA (learning support assistant) view from the MAST study:

When you have a child on a Statement, it can be very alienating if they're always working with one LSA [learning support assistant]. That's not healthy ... no one would want to work solely, 20 hours a week with one person, singularly; without any personal involvement in the school community.

And here are the views of two teachers:

... so if you've not got the right CA [classroom assistant] ... when you've done the explanation part of the lesson, [the CA] might not have understood it and you're relying on somebody that's perhaps only one step ahead of the (pupils') ability, or in some cases, not even ahead of their ability, so they're lost ...

The teacher can't leave 35 to deal with the SEN pupil, so depend totally on LSA. Need to 'teach' LSA first – this adds to stress. No time to discuss with LSA, they're not paid to stay after school. We do it at break time. I would rather send them to do routine admin/ photocopying. Don't use the LSA in that way, not paid for that role. LSA's need training. Pupils can laugh at LSA, this adds to behaviour problems.

Class size, differentiation and TAs. It was possible on the basis of the MAST case studies to conduct a fuller analysis of the differentiation involved in the teaching of pupils with SEND. What emerges from this

detailed analysis is the extent to which it was the TAs who provided differentiation for pupils seen to be in need, by taking primary responsibility for creating or modifying material, and making teaching accessible for pupils with Statements. We were surprised to find just how clear and primary the role of TAs had become. (See Webster and Blatchford 2015, for a longer version of these results.)

We identified four types of differentiation across the 48 case studies:

1. By the organisation of the school, class and/or year group ($n = 13$)
2. By task ($n = 43$)
3. By TA support/talk ($n = 46$)
4. By outcome ($n = 23$).

First, there was differentiation by the organisation of the school, class and/or year group. In a quarter of cases the most basic first level of differentiation was to allocate Statemented pupils to a separate Additional Resource Provision (ARP) or to the lowest-attaining literacy and/or numeracy set ($n = 13$). Additional interrogation of the case study data revealed that over half of schools set the year group by attainment for numeracy ($n = 27$) and/or literacy ($n = 15$). Five schools had an ARP that the Statemented pupil attended. (Remember that the MAST results only refer to primary-aged children, not to secondary schools, where setting is more common.)

As the observations from the systematic observations showed, pupils were often grouped (at tables) by attainment within literacy and numeracy sets, and some school staff referred to this kind of within-class separation as the 'second level' of differentiation.

The second type of differentiation was through the tasks given to pupils; TAs were found to have a high level of responsibility for devising and selecting tasks for pupils with SEND. TAs very often had to differentiate the tasks to make them accessible for the pupils with SEND ($n = 43$). Teachers very rarely supplied this extra level of differentiation for pupils with Statements. As one TA put it: 'I'll have to go away and differentiate [the task]; make it a bit more simplified.'

TAs were often given a free rein by the teacher to adapt and/or create tasks:

Some of the poetry [the class have] done, I've just said, 'There's no point trying to get [Pupil with SEND] to do that. She won't get anything out of it.' So I then go away and I will do something that

maybe the Year 2s would do for poetry; so a much, much lower level but still a similar task. (TA)

Quite a lot I do at home ... Trawling on the Internet, trying to find worksheets and activities that I think would be suitable for her. (TA)

The issue of whether TAs are best positioned or have the training to provide this type of differentiation was highlighted in researchers' field notes, which described numerous instances of unengaging and repetitive work. There were also examples of TAs selecting tasks that had no pedagogical content, such as colouring-in activities.

The use of resources was also considered a form of differentiation ($n = 43$). In many cases, tasks were made 'more visual' or tactile by the use of visual aids, pictures or materials ($n = 20$). Again, it was TAs who tended to produce or source materials. This was especially the case for numeracy lessons, where researchers frequently noted TAs' use of materials to model and demonstrate tasks, and for pupils to use to complete work.

The third and most popular form of differentiation, found in almost every case study, was in the form of TA interactive support, and, in particular, the way in which they provided differentiation verbally. Teachers and TAs described two particular features of TA-pupil interaction: (1) modification of language (for example simplifying it, breaking it down) ($n = 37$); and (2) repetition of a teaching point ($n = 11$).

The majority of comments described how TAs 'tailored' their language in ways that made curriculum content, tasks and instructions more accessible:

Just very simple language ... Try and break it down into information chunks. (TA)

You have to tailor your language as if you were talking to a younger child, just to make sure she has understood. (Teacher)

It was interesting to note that school special needs coordinators (SENCOs) and teachers recognised that modifying talk in this way was actually a considerable skill:

Teachers are expected to move things on at quite a fast pace, and you get children on SEN who cannot move at that pace. It's very

difficult and it takes a lot of skill to pitch down what you want those children to do, so that you're helping them to move on to the next step. And that's a real skill. (SENCo)

As was found in the DISS project, this form of verbal differentiation was often performed 'on the hoof' and tended to follow the lead set by the teacher in their talk to the class. Therefore, TAs were forced, in the moment, to convert and filter the teacher's whole class talk, make judgements about what words and aspects of it the Statemented pupil could comprehend, and then reinterpret or rephrase it in a way that they felt the pupil could understand. Quite understandably, some TAs said that this was challenging and stressful.

Many of the pupils tracked in the MAST study were described as having poor retention skills, so TAs explained that a high degree of their interactions with pupils involved repetition.

He normally does need it repeating to him, and it does need to be very specific and what you're going to do first; what you're going to do second ... so small steps. (TA)

In the DISS project, we described a phenomenon that we called 'stereo teaching', which is where TAs were heard to repeat the teacher's whole class talk to the pupils they supported (often word for word), directly after the teacher had spoken (Blatchford et al. 2012). Given the lack of pre-lesson preparation TAs received, this practice – which was again observed in the MAST project – was perhaps understandable.

A fourth type of differentiation was by outcome – a feature of half of the case studies ($n = 23$). In such cases, pupils with Statements were expected to produce less work than their peers.

If other kids are producing three paragraphs, then he might only produce two or three sentences, for example. (SENCo)

The class might have had a spelling test with 50 words, whereas he would do about 20 or something like that. (TA)

Over and above these four forms of differentiation, we also found in the MAST study a high degree of TA-led interventions with pupils with SEND. The systematic observation data showed that the observed pupils with SEND spent 17 per cent of all observations in some kind of intervention. Most of these were conducted out of the class (13 per cent of

all observations) and most of the interventions covered topics in literacy (9 per cent), with 4 per cent in maths, 2 per cent other subjects and 3 per cent non-curriculum areas (for example, motor skills; speech and language). It was TAs who largely had responsibility for delivering the interventions. In 34 (of 48) cases the TA was responsible for delivery, and in 7 cases the SENCo or the teacher was responsible for delivery. A number of these interventions were 'homemade', with TAs developing the interventions in 12 cases, and the SENCo/teacher in 10 cases.

We can therefore see the key role TAs have come to play in the teaching of pupils with SEND in mainstream primary schools. They have taken on a main role in the differentiation of teaching for pupils with SEND, and the provision of interventions. The main point arising out this discussion, which often gets overlooked, is that the underlying reason for the use of TAs is the diversity of pupils found in these classes along with a large class size. The strategies discussed above, especially the use of TAs would not be so obviously needed if the class size were smaller.

Conclusions

The key contribution of this chapter to our understanding of the effects of class size is that there are two ways in which differences between children in the class affect the way class size works: first, the range of pupils provides a context which affects teaching and, second, the effects of class size vary for different kinds of pupils. We now make some summary and concluding points about each of these.

Key Themes
Types of Pupils: Class Composition <ul style="list-style-type: none">• Ability range• SEND
Teaching: Differentiation

Class size, types of pupils and challenges for teaching

We have seen that the mix of pupils in the class can affect the teacher's success in managing the class for learning. We have heard many teachers comment on the way that the composition of the class can result in

different social dynamics and challenges for management. Perhaps most obviously, a class is far more challenging to manage when it contains pupils who have behaviour problems or special educational needs. Teachers also comment on other ways the class composition affects social dynamics between children and therefore classroom management, as, for example, when there are a lot of boys relative to girls or an unusually high number of high performing children. In our view, the way that the composition of the class affects teaching is a rather overlooked area of research but our focus in this chapter is more specifically on the way that the number of children in the class will affect the range and mix of pupils in a class. Importantly, teachers will often find that difficulties that can arise from having a group of difficult or challenging children can become seriously problematic with a large class.

Teaching is a difficult, multi-faceted task with many challenges and many continuous, often simultaneous activities to set up and manage. Doyle (1986) and Kounin (1970) have provided detailed accounts of the complexity of classrooms and teaching. The extra challenge for teachers, which we have identified in this chapter, is that they often have to deal with a diverse set of pupils and this necessarily means they need to develop strategies for differentiating work, the curriculum and their interactions with pupils. This is an inevitable part of teaching, but the results presented in this chapter suggest that this becomes more difficult with more pupils in the class.

Differentiation (see **Key Themes** box opposite) is different to the other boxes in the sense that it is enacted through other forms of teaching, for example, differentiation is carried out by changing the balance of the interactive contexts, changes in the interactive qualities of teaching and the nature of the tasks given to pupils. We return to the issue of differentiation a little later when looking at pupils with SEND specifically.

Pupils with SEND and class size

Descriptive studies of everyday classroom experiences of pupils with SEND

We looked at results from the DISS study which were clear in showing that the amount of interaction teachers have with children decreases with level of SEND, while the amount of interaction TAs have with children increases with level of SEND. What is more, we found that the more interactions a pupil had with a TA, the fewer they had with their

teacher, and so support from a TA is not additional to the teacher, as is sometimes claimed.

A second set of results from the MAST and SENSE studies looked at the classroom experience of pupils with SEND and compared them with typically developing pupils. This showed, in summary, that pupils with SEND spend more time at primary school out of the classroom, more time with TAs, and less time with classmates, when compared with their average-attaining peers.

Overall, pupils at primary level have larger class sizes than at secondary, and secondary pupils with SEND spend more time than average-attaining pupils in smaller attainment-set classes.

Putting together the key observation results on class size reported above, along with other results from the MAST and SENSE studies, we find that at Year 5 pupils with SEND spend over a quarter of their time away from the mainstream class, class teacher and their peers. When they worked in groups, it was mostly with other pupils identified as low-attaining and/or as having SEND. In mainstream secondary schools, the educational experiences of pupils with Statements/EHCPs are characterised by being taught in small homogenous, low-attaining classes, with at least one TA present. Their average-attaining peers, meanwhile, are taught in larger homogenous classes, with just the teacher present.

Observation results therefore show that in primary schools, pupils with SEND experienced a high degree of separation from the classroom, teacher and peers, and in secondary settings we found what might be called a form of segregation, with lower-attaining pupils and those with SEND taught alongside one another, separately from their average- and higher-attaining peers. The rationale for these organisational arrangements is ostensibly to assist struggling pupils, but there may be unintended consequences that we believe suggest the value of a careful rethink of classroom contexts for learning in primary and secondary schools. We look at these unintended consequences in more detail below.

Does class size differentially affect the behaviour and interactions of pupils with SEND?

We have found in this chapter that the effects of class size can be more pronounced or have different consequences for different types of pupils, in particular that pupils with SEND and low-attaining pupils can suffer more in large classes. We have examined observation data that showed that in larger classes children with SEND tend to receive less overall teaching and more critical comments from the teacher. Along with the

other pupils, larger classes also mean less individual attention for pupils with SEND and fewer active contributions from them in class. These factors are likely to be especially important for pupils with SEND, who are likely to require more, not less, individualised teaching.

One likely interpretation of the finding that pupils with SEND receive less overall teaching is that such pupils are less likely than other pupils to be included in whole class teaching, because it is not felt they are at an appropriate level to follow with the rest of the class. There is evidence to support this from the MAST study, reported above, where we found that pupils with SEND tend to be separated from the teacher and the curriculum, and this is connected to the amount of time they spend with TAs and in interventions in and out of the classroom. Whether this interpretation is correct or not, it is important to also bear in mind that the results are quite clear in showing that the reduction in teaching overall as class size increases is not being compensated for by more individual attention from the teacher: as class size increased these pupils, as with all pupils in the class, experience less individual attention from teachers.

Class size and SEND: Challenges for teaching – differentiation and TAs

Perhaps the biggest problem faced by teachers in a large class is adequately differentiating for the diversity of pupils within the class. In many UK primary schools there is a wide diversity in pupils; this is made more extreme by larger class sizes and has important consequences for teaching.

On the basis of the MAST case study results we found that there were four main types of differentiation, in the case of pupils with SEND. What was significant was the important role that TAs played in providing the differentiation needed. There is a very important discussion to be had about the appropriate pedagogical approaches to adopt in order to ensure that all pupils are kept engaged in learning and making progress. This is a challenging but essential part of teaching. But we feel that large class sizes are making this task more challenging, and that the role of class size in the increasing use of TAs has not been given the attention it deserves. Issues of differentiation are not often explicitly laid at the door of large class sizes.

Interconnectedness

This chapter extends our previous comments on interconnectedness. As well as the interconnections between class size and classroom processes

like teaching and grouping practices and peer relations, we now add the extra complexity of the composition and diversity of pupils within the class. We have seen in this chapter how this diversity has implications for classroom processes like teaching and that these implications are in turn affected by class size.

Class size and pupils with SEND: Pedagogical implications

Differentiation

We have seen throughout this book that a key way in which teachers usually provide differentiation is through individual attention. We have seen in this chapter that in the case of pupils with SEND this is, in reality, often carried out by TAs. We look at the strategic use of TAs below but here we offer a few comments on differentiation in relation to class size and SEND.

Alexander's observations (2001) are in line with the authors' impressions that in some countries there is more likelihood of a single and less-differentiated input to the class. This might owe much to traditions of teaching in those countries, but it might also have a lot to do with the relatively less diverse and narrower attainment range within schools. Differentiation will most obviously be needed when there are pupils with very different levels of attainment and – following educational policies toward inclusion, which have been a feature of education in the UK in recent years – also pupils with SEND in the class.

It is obviously important to think through appropriate pedagogies for pupils with SEND, but it is also important to be aware of the educational contexts within which teachers have to work and which can make pedagogical strategies effective or not. There's no point in having a pedagogical strategy – for example, one which depends on extensive sustained one-to-one input from the teacher – when the reality is that this is not possible to achieve with the size of class the teacher has to manage.

Elsewhere we have looked at the role of individual attention and teaching to groups in providing differentiated teaching. We just add here that if individualised attention is so difficult to achieve, and the use of TAs to provide it is problematic, then this reinforces the value of thinking through group-based approaches to differentiation, which we introduced in earlier chapters. The four forms of differentiation we examined above are largely based on individual attention and the use of TAs, and rethinking differentiation in terms of group-based teaching

can be both efficient and valuable – for example, through the setting of group-based tasks and instruction. The teacher can also use the TA in more strategic ways to help support this group-based approach, and it is to the use of TAs that we now turn.

The strategic use of TAs

This leads us to the second main implication for teaching arising from the discussion in this chapter. The classroom management challenge faced by teachers with larger classes and the inclusion of pupils with SEND is the background to one common solution, repeatedly shown in this chapter: namely, the large increase in the numbers of TAs in schools. We have seen that TAs often support pupils with SEND and that teachers find this helpful because they can then better attend to the rest of the class. However, we have seen that using TAs in this way can let down the children with the highest level of needs. The key problem is the understandable but inappropriate way TAs have been used as an informal alternative form of provision to hard-pressed teachers. This is compounded by the lower level of classroom talk from TAs and the lack of time for preparing TAs to work with such pupils. It is widely recognised that what pupils with SEND need above all else is the careful attention and monitoring by trained teachers, and we have seen that this is difficult to achieve with large class sizes (Blatchford et al. 2012).

We repeat our point that the need for, and increase in, TAs had much to do with class sizes. It is difficult enough for teachers to manage a class of, say, 30 pupils under normal circumstances but their task can be made more challenging when some of these pupils have special educational needs and disabilities. It is probably not too strong to say that TAs are the main strategy used to help include pupils with SEND into mainstream classrooms.

We are very clear that there are alternative ways of deploying TAs which can greatly help make the problem of large classes much easier. This is based on our extensive research, evaluation and knowledge exchange projects with our colleague Rob Webster. Following the troubling findings from the DISS project concerning the negative impact of TAs on pupil progress, we conducted the Effective Deployment of Teaching Assistant (EDTA), funded by the UK Esmée Fairbairn Trust. This was designed to work with schools in two Local Authorities to identify alternative approaches, with the key aim of TAs adding value to teachers rather than replacing them. The resulting guidance was based on what we called a ‘Wider Pedagogical Role’ (WPR) model, which had

three key components – Deployment, Preparedness and Practice – and was published in a handbook for schools, now in its second edition (Webster et al. 2016). The guidance was also summarised in a widely circulated pamphlet by the Educational Endowment Foundation (EEF) (Sharples et al. 2015). Guidance for TAs themselves can be found in Bosanquet et al. (2016).

The WPR model is not only an explanatory framework, but also a useful organising structure for rethinking the management and deployment of TAs in ways that can make them more effective.

The first component is *Deployment*. Instead of working predominantly with low-attaining pupils and those with SEND, TAs can work more often with middle- and higher-attaining pupils, creating the opportunity for teachers to spend more time working with lower-attaining pupils and those with SEND. This alternative model of deployment not only reduces the occasions when TA-supported pupils are separated from the teacher, the curriculum and their peers, but also greatly improves and enriches teachers' understanding of the learning needs and progress of struggling pupils.

The second component is *Practice*. Information on TAs' interactions with pupils gathered in the DISS project has shown the effects of ineffective types of talk (for instance, providing answers for pupils). Recent work has provided a more fine-grained analysis of TA to pupil talk and has shown the ways that TAs can inadvertently close down the talk with pupils and too easily provide answers rather than guiding pupils to a better understanding of the topic (for example, Radford et al. 2011; Radford et al. 2014). Inappropriate strategies when dealing with pupils who do not understand the material – a common problem in the case of pupils with SEND – need to be rethought, and our recent work has provided alternative frameworks.

Preparedness is the third dimension of the WPR model. It is important to improve TAs' pre-lesson preparation to reduce the times when TAs go into lessons 'blind' or rely on picking up information via teachers' whole class delivery. This has implications for the quality and clarity of teachers' lesson plans. We need to create conditions so that teachers can meet with TAs before lessons. Some schools went further, adjusting TAs' hours of work in order to create meeting time. The creation of time to meet can have a positive effect on both teachers' and TAs' perceptions of preparedness. In some of the schools who worked with us, greater awareness of the specific issues relating to TAs' practice led to schools providing tightly focused training on pedagogical techniques. We found in the MAST project that TAs, but also teachers, could feel underprepared to

work with pupils with SEND, and this aspect of preparedness also needs attention through training and school development.

We have found that the success of rethinking the use of TAs crucially depends on the involvement of, and leadership by, the school leadership team. This is important in order to provide the organisational framework for change and requires leadership teams to think more strategically about the purpose of the TA role and the appropriateness of what is expected from them in terms of pupil outcomes.

Classroom contexts and SEND

Teaching methods and curriculum and assessment arrangements are clearly important, but it is also important to know about the classroom contexts within which they and ultimately pupil learning take place. Classroom learning contexts may serve to facilitate or inhibit pedagogical approaches. It seems apparent that smaller classes and smaller groups are a vital part of an effective educational context for learning, especially for pupils with SEND. They need a more individualised educational support, and we have seen this is more difficult with large classes. It is worth reminding ourselves that in the seminal report led by Mary Warnock (1978) there was the recommendation that the integration of SEND into mainstream schools was aided by class sizes being smaller and teachers receiving extra training for working with SEND.

Small classes and/or teaching groups are standard in special schools, as well as in Units or Additional Resource Provision in mainstream schools, and the authors have direct experience of such arrangements working well. Let us give one example. In one primary school the pupil being observed for the purposes of the MAST study spent each morning in a Unit. This was sited in a classroom not far from the child's Year 5 classroom and usually had six pupils. There was an experienced teacher in charge, with two TAs. Rather than working with a child separated from, or outside the classroom, the TAs worked closely with the teacher in supporting his lesson plans. Rather than working with individual pupils they had more of a roving role for the class, supporting the lesson rather than a particular pupil. In contrast to the situation commonly found in schools, the TAs therefore supplemented the teacher and did not in effect replace him.

The current situation in the UK is not helped by institutional and historical arrangements which make the setting up of smaller units so difficult. We have seen – rather perversely – that in the UK children in primary schools are in larger classes compared to secondary schools. To

us this seems even more troubling, now that we have looked in detail at the consequences and difficulties that follow. Pedagogically speaking, it would make more sense for the younger pupils to be in smaller classes. But the situation that emerges from the present study is even more troubling, in that pupils with SEND in primary schools are in much larger classes than they experience in Year 9. If it is true that pupils with SEND are in general most effectively taught in smaller classes, then one might ask, why wait until their third year of secondary schooling before educating pupils in such small classes?

We have seen that one very common classroom organisation strategy when dealing with large numbers of pupils and diversity in student attainment, especially in secondary schools, is to organise classes into sets, allocating pupils to classes for certain subjects on the basis of their attainment. We found that children with SEND will be more likely to be allocated to smaller lower-attainment sets. One needs to be careful. A small set does not necessarily mean the teaching is well adapted to the needs of pupils in the set. In one low-attaining set in a secondary school on the south coast of England, the class size was small – about 12 pupils – and the class was well staffed with a teacher and two TAs. But it was the observer's view that children's tasks were set at a very low level, seemingly the result of low expectations, with activities that were little more than playing a game. Any reductions in class and group size needs to be accompanied by careful attention to the quality of work, teaching and expectations.

Bringing it all together: Toward a social pedagogy of classroom learning

In this book we have sought to understand the effects of class size. We have seen that much of the argument about class size has hinged on the strength of the association between class size and academic attainment. We have also seen that for the majority of commentators the strength of this association is judged to be modest at best, and the natural conclusion, accepted by many, is that class size is not important. For many, that is all one needs to know about class size. From our point of view, however, this is far from the end of the matter. To judge class size effects simply in terms of the strength of the association between class size and academic attainment is misleading and limited. To counter this point of view, the bulk of this book has been an examination of the relationships between class size and a number of classroom processes. We have seen that the association between class size and academic outcomes is embedded in, and needs to be understood in the context of, these interconnections.

In this chapter we seek to develop an integrated and comprehensive way of viewing the full range of class size effects.

Our model of class size effects: Mapping the interconnectedness

This book has drawn on extensive and varied methods of data collection, including large-scale questionnaire surveys, case studies and systematic

observations from the CSPAR, DISS, MAST and SENSE studies, to map out effects across a wide range of factors. In [Chapter 3](#) we examined the effects on pupils and showed that the effects are multiple, not singular. We have seen that the almost exclusive concern with class size effects on pupil attainment, which has dominated research and policy, risks seriously underplaying and even misunderstanding the effects of class size. The rest of the book has been a close examination of what we have learned about the effects of class size on key classroom processes: on teaching ([Chapter 4](#)), grouping practices and classroom management ([Chapter 5](#)), peer relations ([Chapter 6](#)), tasks and curriculum ([Chapter 7](#)), and administrative aspects of teaching ([Chapter 8](#)). We also looked at the connections between class size and types of pupils in the class ([Chapter 9](#)).

The model in [Figure 10.1](#) summarises our results. The size of the data base does not of course necessarily guarantee its quality, and in several chapters we were more reliant on the views of practitioners without the complementary data from, for example, classroom observations. But we feel confident that this model captures the nature of the processes and their interconnectedness which we have found to be crucial to understanding how class size effects work. In the interests of space we do not refer much to other research in this section (see [Chapter 2](#) for a review).

[Figure 10.1](#) is divided into three sections: contexts, processes, and effects on teachers and pupils, each encompassing several boxes. The following summarises each of the areas within the corresponding boxes in [Figure 10.1](#).

Contexts

Classroom contexts: Time

This box captures two main aspects of the classroom context that are affected by class size and which in turn have strong implications for all classroom processes.

We have come to the view that time underpins many of the issues that arise throughout the book. As we have seen in a number of chapters, a central problem is that a large class size increases pressures on time, and that time – or rather the lack of time – seems to be a key underpinning

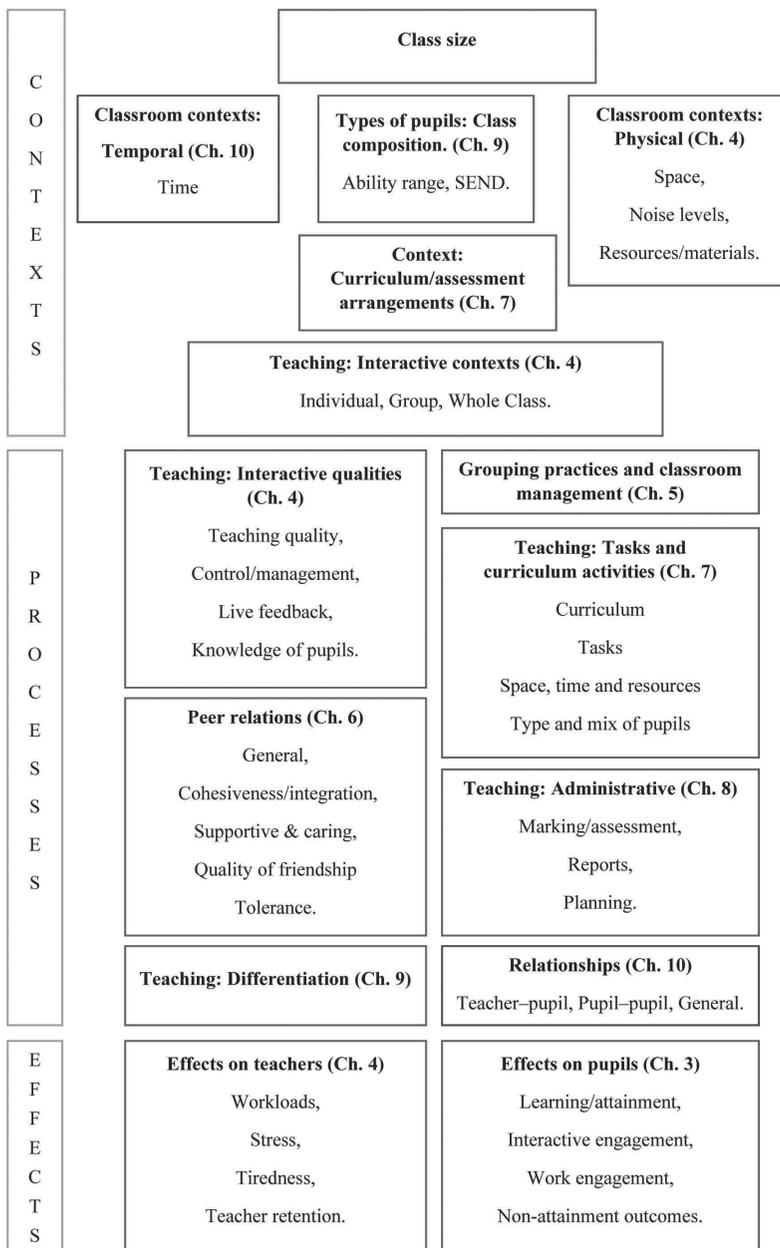


Figure 10.1: Class size and classroom processes: Summary model. Diagram by the authors.

factor that makes a large class difficult for a teacher. The consequences of time are difficult to pin down since they are rarely mentioned by teachers specifically as a main influence. As a result we did not create a specific category for time when coding, for example, the TQ responses. Time has not to our knowledge been investigated as a primary mediator of class size in relation to pupil outcomes, but it seems clear from the numerous sources of data in this book that it underpins many of the problems teachers and pupils faced in large class sizes. A lack of time makes it more difficult for the teacher to attend to all pupils, give individual attention or attention to small groups, or provide a variety of tasks and activities, and adds to pressures on marking, assessment and report writing.

Types of pupils in the class: Composition

We saw throughout the book, but specifically in [Chapter 9](#), that class size interacts with the types of pupils in the class in two main ways: first, the increased diversity of attainment levels and the presence of pupils with SEND becomes progressively more problematic as class size increases, because of extra demands on teacher time and management, and, second, a larger class meant some types of pupils, in particular pupils with SEND and low-attaining pupils, can suffer more.

Classroom contexts: Physical

Throughout the book we have seen how space in the classroom affects a number of aspects of teaching and pupil learning and behaviour. We saw, particularly in [Chapter 4](#), that, given a fixed classroom size, the space available for teachers and pupils tends to decrease as class size increases. And we saw that this affects teaching approaches (for instance, a large class and lack of space mean a teacher is forced into whole class sessions, leading from the front), classroom organisation, pupil behaviour, problems with conducting group work and managing pupils with behaviour problems.

As we also saw in this book, class size can affect another physical feature of the classroom context: the resources and materials used for teaching. A large class size can affect access to science equipment and computers, for example, with negative implications for teaching and pupil involvement in the work. Noise levels also increase with the size of class and this can have negative implications for learning.

Context: Curriculum and assessment arrangements

Another feature of the classroom context is the curriculum and assessment arrangements which set a framework within which teachers and schools have to work. This is different to the adaptations teachers make to these arrangements, in terms of tasks they use in the classroom.

Processes

In [Chapters 4 to 8](#) we described a number of classroom processes affected by class size. These are represented in the ‘Processes’ section of [Figure 10.1](#).

Teaching: Interactive contexts

In [Chapter 4](#), across the range of different methods of data collection, we found that class size affects the balance of the three main interactive contexts for learning: individual, whole class and group.

Individual attention. 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, working on the child’s present ideas and capacities, 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.

Groups. 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); group size increases with class size, making teaching and classroom management more difficult.

Whole class. 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 than they would like. None of the teachers in this study suggested 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.

Teaching: Interactive qualities

The next part of the model as seen in [Figure 10.1](#) describes the nature or quality of the teaching that takes place in the three interactive contexts.

Teaching quality. In their own words (see [Chapter 4](#)), teachers said that smaller classes mean teaching is more likely to be in-depth, higher quality, effective, thorough, better, more varied, more adventurous and more attentive to pupils. There were three particular features of teaching, cited by teachers when considering the effect of class size: control/management, live feedback and knowledge of pupils.

Classroom control/management/organisation. 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. Findings from the DISS systematic observation study showed that there was a consistent trend across both primary and secondary education stages for low-attaining pupils to receive more critical comments from teachers in larger classes.

Live feedback. Another feature of teaching seen by teachers to be affected by class size is the amount and quality of 'live' feedback to pupils, that is, immediate feedback on pupils' work. 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. This feature is clearly related to more individual attention. It seems similar to Brophy's (2000) 11th generic principle of effective instruction – 'goal orientated assessment'.

Knowledge of pupils. Another quality of teaching connected to class size, and clearly shown in [Chapter 4](#), is the way that 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.

Grouping practices and classroom management

Although groups in the classroom is one of the interactive contexts of teaching already discussed, we have identified in addition a separate box in [Figure 10.1](#) because, as seen in [Chapter 5](#), detailed analysis of teacher-completed questionnaires and interviews with teachers and pupils as part of case studies in schools showed the important 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 we have seen the way that increases in class size necessarily lead to bigger or more numerous groups, and pressures on space and resources. We see that these features, and the mix of characteristics of the students in the class, also set the context for important but difficult classroom management and teaching decisions.

Peer relations

Another process affected by class size is peer relations. We saw in [Chapter 6](#) that the majority of teachers in both the case studies and the TQ were clear that, other things being equal, peer relationships were likely to be better in a small class and worse in a large class. In the case studies there were comments on how smaller classes led to more positive relationships and less conflict, more cohesive relations and less fragmented social and friendship groupings. A similar picture emerged in the analysis of the TQ responses, and we identified from teachers’ responses six main ways in which peer relationships were positive with small classes or negative with large classes: (1) General on positive relationships (for example, in larger classes pupils don’t get along with each other, there is more friction in relations, there are more arguments, fights and petty squabbling); (2) Cohesiveness/integration (for example, gelling and forming a close bond as a group in small classes; more fragmentation of peer relationships in larger classes); (3) Supportive and caring toward each other; (4) Quality of friendship relations (for example, in terms of durability, security, depth and lack of conflict); (5) Tolerance (for example, integrating newcomers and children with SEND, and less bullying); (6) Better working relationships (for example, working as a team, better

group work, longer and more detailed conversations between pupils). As we said in [Chapter 6](#), 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.

Teaching: Tasks and curriculum activities

This box in [Figure 10.1](#) identifies the relationship between class size and the curriculum, tasks and activities. While class size may not much affect the curriculum covered, because of constraints set by the National Curriculum and assessment arrangements in Britain, 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. Though the curriculum may therefore largely be a given, the teacher still remains responsible for selecting tasks and teaching approaches for pupils in their class. Compromise is an unavoidable aspect of teaching, but it seems particularly acute in a large class. We saw in [Chapter 7](#) that 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 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.

Teaching: Administrative

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. In [Chapter 8](#) 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 show how much these extra demands have a negative impact on their own teaching, well-being and satisfaction with their job. Worryingly, we saw examples of ways in which the administrative burdens resulting

from a large class could influence teachers' decisions about the types of tasks and materials for pupils, in the interests of classroom management and teacher workloads rather than learning.

There also appeared to be a connection between some aspects of administrative work and instruction, particularly concerning marking in the form of immediate feedback on work done by pupils. The quality of this feedback is clearly vital for pupils, and we saw in [Chapter 8](#) that it is more likely to be shorter and less detailed with a large class.

Teaching: Differentiation

We have added another box to our model in [Figure 10.1](#) because, as we saw in many of the chapters in this book, and especially in [Chapter 9](#), differentiation of teaching and pupil tasks, to match the learning needs of individuals in the class, 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.

Differentiation is different to the other boxes in our model, being an extra and, in a way, superordinate process to those described in the individual chapters. Differentiation is carried out, for example, by changing the balance of the interactive contexts, by changes in the interactive qualities of teaching, and through the provision of tasks and activities. In this respect it might be considered an overarching second-level factor rather than a primary effect.

Relationships

The final box in the 'Processes' section of [Figure 10.1](#) can be considered as another second-level factor, in the sense that it is an overarching theme which permeates other aspects. Relationships are not often cited specifically by teachers but might be considered to be the web that binds many other processes together. We adopt a broad approach to the idea of relationships and identify three main components. Most obviously, our approach includes the quality of interactions between pupils and teachers in terms of, for example, warmth and individual knowledge of pupils. As we saw in [Chapter 4](#), teachers can get to know each student better

in smaller classes, and this allows pupils to be supported emotionally and respected as individuals. There are strong reasons for arguing that teacher–pupil relationships are a key part of successful teaching. There is a strong educational psychological literature on the importance of teacher–pupil relationships (for example, Hamre and Pianta 2010; Pollard and Tann 1993; Kutnick 1988). Second, it includes relationships between pupils in the class – a theme developed in Chapters 5 and 6. Third, it includes a broader way of thinking about relationships and class size, which we have considered specifically in this book, but feel it appropriate also to mention here. There are a number of allied terms used in the literature but the main terms suggested by the results in this book are classroom learning environment, psychological sense of community, cohesiveness, connectedness and belonging, and interpersonal climate (Bateman 2002; Galton et al. 2015; Finn et al. 2003; Finn and Shanahan 2016; Finn 2019; Zahorik et al. 2002). Finn and Shanahan (2016) argue that although some of these factors can be seen in larger classes, under the right conditions, others are only really possible in small classes; for instance, close relationships with each student, and a high group cohesiveness.

Effects

The third section of Figure 10.1 concerns effects of class size on teachers and pupils.

Effects on teachers

One clear consequence of large class sizes, revealed in the TQ and case study results (see Chapter 4, but also in other chapters), is the cost to teachers themselves, in terms of feelings of guilt, stress, tiredness, having less creative energy, and their health. These effects should not be underestimated. When critics state that class sizes are unimportant, because all that matters is pupil attainment, they overlook the very real consequences for teachers with large classes in terms of strain and exhaustion.

Effects on pupils

In Chapter 3 we explored the literature on the relation between class size and pupil attainment, and also showed results from our own CSPAR study. We made the point that the usual way of looking at academic

effects is quite narrow, and usually restricted to the core subject areas of literacy and mathematics. We looked at observation and questionnaire data to show how class size affects other aspects of pupil functioning, including engagement in class. We made the point that knowledge is still scant on other broader aspects of pupil functioning, for example in creative areas, even though the effects of class size may be more marked there, given that pressures on schools and teachers mean that core areas can be prioritised over other areas.

Toward a social pedagogy of classroom learning: Exploiting the potential of the interconnectedness

The boxes in [Figure 10.1](#) can be considered the ‘elements’ in the classroom context that we have found to be connected to class size. The elements comprise the classroom processes and contextual factors we have identified in the chapters in this book. The classroom can be considered as being a dynamic system and perhaps the three main points to emerge from the results in this book and in our summarising model in [Figure 10.1](#) are, first, the interconnectedness of components in the system, second, the fallacy of isolating an individual component for examination and, third, the need to examine elements in context. As Heft (2001) puts it: ‘Psychological functions at any given moment emerge from a confluence of multiple dispositions to act expressed in conjunction with the multiple and changing conditions of the environment confronting the individual over time. And considering the active character of animate processes and the changing character of environmental conditions, this is a dynamic, ceaselessly shifting process’ (318). The challenge is to identify ways of approaching the ‘multiple dispositions to act’ and the ‘changing conditions of the environment’ at work in relation to changes in class size. We believe that the search for the interconnections between classroom contextual factors and classroom processes is not only important conceptually but also in terms of policy and practice.

The elements in [Figure 10.1](#) define the structure of the ecosystem of the classroom; the next step is to identify the interconnections within and between classroom processes and contexts when the classroom ecosystem adapts to changes in class size. It would help make this step, it seems to us, if we set out to consider systematically the appropriateness of the adaptations made in the face of class size differences. This is important because we have seen how the adaptations made by teachers to class size are not always for the best, as, for example, when teachers

don't change their teaching approaches, or they adapt to a large class by hearing children read at lunchtime and marking for hours over weekends.

In order to help with a way of conceiving of adaptations to class size with an eye on their pedagogical intent, we use the idea of a 'social pedagogy of classroom learning' as one way of moving this kind of thinking on, with conceptual benefits for understanding class size effects and practical benefits for schools.

Social pedagogy of classroom learning

We have argued that class size is best conceived as a classroom context for teaching and learning that interconnects with other classroom contextual aspects and processes. It is these interconnections, and, in particular, the way that teachers manage the interconnections which are the key factor when considering effects on educational outcomes.

We have mentioned that Blatchford et al. (2003d) originally coined 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. Kutnick and Blatchford (2014) then went on to show that classrooms involve distinct physical and social settings within which decisions are taken about how best to coordinate and manage the various factors involved. These components exist in dynamic relationship with each other, and effective teaching requires an understanding of their separate and interconnecting influences.

Kutnick and Blatchford (2014) use the notion of social pedagogy to show how different aspects of the classroom environment – group size and composition, teaching roles, learning tasks – come together in a dynamic relationship that is both social and pedagogical. One basic idea is that it is important to adapt teaching – the classroom interactions, groupings, activity contexts, etc. – to more 'fixed' classroom-level factors like class size, classroom size, seating arrangements, characteristics of children and the curriculum.

Effective teaching, then, is not just, for example, about determining what teaching approaches and interventions work best, in a sense out-of-context. It also involves recognising the interconnectedness between elements, and, going further, understanding what might be called the social pedagogy potential of these interconnections.

Following Kutnick and Blatchford (2014) we can use the example of groups and groupings within primary school classrooms. Each dimension of a classroom group (for example, its size, composition and degree of stability in membership) will have a different pedagogic ‘potential’ and this will also be affected by the interconnections between dimensions (to give an example, group size in relation to attainment-level composition). This might seem obvious but, importantly, observational research has shown that there is often little relationship in practice, for example, between the size of groups and the learning tasks or types of interaction assigned to them by the teacher (Kutnick and Blatchford 2014). Most children, no matter what their age, can be observed to be seated or working in pairs, or in small or larger groups, and, moreover, still often working on individualised tasks. Given this, it is worrying that the social pedagogic potential for learning in classroom groups is not often considered by teachers, or a part of initial teacher training.

Returning to ecological psychology for a moment: despite its insights and strengths, it can be criticised for implying a degree of determinism in the influence of the context on teachers and pupils. In order to take the social pedagogical idea further, we then also need to factor in how teachers make decisions and adapt to the classroom elements and class size. Teaching is an intelligent activity and intelligence is required in adapting constructively to the interconnections between elements in the classroom, as well as to the curriculum. This leads us to consider how teachers can best take advantage of the pedagogical potential of these interconnections – how to take advantage of the affordances in the classroom environment. The idea of a social pedagogy of classroom learning needs to be developed further, and this is something PB is currently working on. Our hope is that this can build on ecological psychology by providing the basis for identifying the pedagogical potential of the interconnections between elements in the classroom system. We can though, on the basis of findings in this book, provide an analysis of class size and what we call ‘realising the social pedagogic potential’ of classroom processes.

How to make the most of class size: Realising the social pedagogic potential

One key problem in realising the social pedagogical potential of classrooms is, as we have repeatedly seen, that teachers do not always

change their style of teaching and therefore do not capitalise on the potential pedagogical and learning benefits of smaller classes (Cahen et al. 1983; Evertson and Randolph 1989; Finn and Shanahan 2016; Shapson et al. 1980). Stasz and Stecher (2002) conclude: teaching practice is ‘...resistant to change and ... teachers adapt their practices slowly and marginally to new materials and techniques that are introduced’ (29). Perhaps the most obvious example of how not to adapt teaching to make the most of small classes is when a teacher sticks to a largely lecturing style even when given a small class. The important issue here therefore is what pedagogical strategies to introduce to make the most of opportunities afforded.

One approach to how best to adapt teaching to class size changes is to base one’s pedagogical strategy on views and research on effective teaching more generally. The review of class size effects by Biddle and Berliner (2002a, 2002b) draws heavily on such research evidence. Galton and Pell (2010) and Galton et al. (2015) argue that the principles of effective teaching are the same in classes of all sizes, and put forward six principles of effective teaching which have since been used in Hong Kong to guide professional development work for ‘small class teaching’.

This approach is helpful but might be taken further. A next step, we believe, is to also recognise the value of specific research on class size and classroom processes. Zahorik et al. (2002) show clearly how one teacher in their SAGE project made good use of the opportunities accorded by a small class, while a second teacher did not. Their discussion shows how class size reduction on its own is not enough to guarantee effective teaching will follow.

Existing sources of research and advice on teaching in relation to class size are not numerous. Readers will find ideas on effective teaching in small classes in Cahen et al. (1983); the books edited by Wang and Finn (2002) and Finn and Wang (2002), especially the chapters by Zahorik et al., Stasz and Stecher, Anderson and Bateman; the *National Center on Education in the Inner Cities (CEIC) Review* (2000); and papers from Eastern and Western countries in the recent book edited by Blatchford et al. (2016b). Evertson and Randolph (1989) argue, on the basis of an analysis of STAR classrooms, that a switch from the skills-/knowledge-based curriculum found in Tennessee schools at the time, to a more learner-centred one, with an emphasis on learning processes rather than products, would do much to help take advantage of a small class environment.

As above, we need to recognise that teaching is about making sometimes difficult pedagogical choices. The problem we are raising here is that pedagogical choices can often be made with little regard to class size and what is known about taking advantage of small classes and maximising the pedagogical potential of larger classes. As we have seen, too often they will continue with the same methods, whatever the size of class. Consistent with the idea of a third generation of research on class size (see [Chapter 1](#)), it is not just a matter of reducing (or increasing) class size but of what changes to teaching then take place to make the most of the contextual change.

Box 10.1: Pedagogical/teaching implications

Teaching: Interactive Contexts

Whole class teaching

Individualisation

- Management versus learning focus
- Live feedback and assessment
- Dangers of individualisation: Over realising the potential?

Differentiation

Using extra adults in the classroom

- The strategic use of TAs
- Extra teachers

Teaching small groups

Collaborative group work

Relationships

Tasks and curriculum

Administrative aspects of teaching

Size of teaching units

In this section we draw on the results presented in this book, as well as insights from ecological psychology and social pedagogy, to identify some ways in which the social pedagogic potential in relation to class size can be realised. We draw together the pedagogical implications that we placed at the end of the individual chapters in this book. These are summarised in [Box 10.1](#).

Interactive contexts

We saw in [Chapter 4](#) that class size profoundly affects the balance of the three interactive contexts, with the likelihood of more whole class teaching and less individual attention in large classes. One of the key pedagogical implications is to think strategically about the balance of these three interactive contexts in relation to the size of class. We address the first two interactive contexts now – that is, whole class teaching and individualisation – and then look at teaching to small groups a little later in this section.

Whole class teaching

In [Chapter 4](#) we saw that whole class teaching is the most common interactive context but that teachers were often not satisfied with the amount of time they were forced to spend on it. The size of class was a major factor for this reliance on whole class teaching. None of the teachers in the CSPAR KS1 and KS2 studies suggested that whole class teaching was an acceptable alternative to individual support of pupils' learning. Indeed, we concur with Jeremy Finn's (2019) point that he has yet to meet a teacher who enjoys teaching large over small classes.

The authors have witnessed exceptional teaching to the whole class, with clear explanations, insightful examples, and the careful drawing out of sometimes difficult concepts. But we have also witnessed whole class teaching which is superficial and formulaic, following the predictable three-step dialogic sequence of closed question, simple pupil answer, followed by equally brief teacher response. With whole class teaching the size of the class is fairly irrelevant – it does not really matter if there are 20 or 40 in the class.

Whole class teaching is an appropriate method of teaching for some topics, but it is not a sufficient approach to teaching the whole curriculum when, as in England, there are relatively large classes and often wide differences in attainment levels within a class. Teachers in large classes are in an especially difficult situation, as we have seen, given that alternatives to whole class teaching – individual instruction and support in particular – are more difficult. But the same problem can affect teachers lucky enough to have smaller classes, because they can still prefer whole class teaching over small group instruction (see also a review in Finn and Shanahan 2016). If they stick to the same amount of whole class teaching then they are not making the most of the opportunities of smaller

classes, which would include deeper forms of learning over passing on information. This resistance to changing teaching approaches in the face of different class sizes is likely to be a main reason why research has found only modest effects of class size reduction.

The pedagogical implication is therefore to judge the appropriateness of whole class size teaching in relation to class size and to search for alternatives when it is found to be too dominant. We examine some alternatives below.

Individualisation

The second interactive context affected by class is teacher interactions with individual students. There is consistent evidence from this book and other research (Finn 2019; Zahorik et al. 2002) that the most obvious benefit of smaller class sizes is increased attention to individual pupils. A recurring theme of Chapter 4 was the value teachers attach to individualisation of instruction, and the way this is compromised by large classes. Teachers perceive teaching to be at its best when they engage with the individual learner, because they have the time to apply their skills to identifying the child's present ideas and capacities, and can then use their expertise to choose the tasks and the approaches that would best support the child in making progress. This appeared to be a core principle, which meant teachers struggled in large classes.

In Chapter 4 we saw some of the qualities of teaching possible with the greater likelihood of more individual attention in smaller classes. We saw that a very important benefit of smaller classes is that it is easier to get to know more about individual pupils, a point made by Finn (2019), Finn and Shanahan (2016) and Zahorik et al. (2002) (see above).

Here we highlight our thoughts on two specific aspects of individualisation of teaching in small and large classes.

Management versus learning focus

We saw in Chapter 4 that one specific aspect of teacher–pupil interaction, seen to be affected by class size, was that a smaller class meant classroom management was easier and pupil behaviour was more likely to be on-task and engaged (see also Finn and Shanahan 2016). In Chapters 3 and 9 we saw that lower-attaining pupils and those with SEND suffered more in larger classes in terms of more off-task behaviour and more critical/disciplinary comments from the teacher. But, crucially, it is

important that teachers make the most of this ease of management in smaller classes.

As Anderson (2002) reminds us, one of the key ways that smaller classes can help teachers is to allow them to shift from a concern with classroom management to a concern with learning. Smaller classes might allow more individual attention and easier classroom management, but one needs to be careful that this does not become an end in itself; attention in a smaller class should not be so much on the ease of management, but on a transfer of attention to learning goals. Anderson sees this as a shift from teacher ‘personal’ concerns to a concern with student learning. In short, the shift is from the teacher to the students and: ‘As part of this transition, they become more able to see classrooms through their students’ eyes rather than their own’ (Anderson 2002, 58).

Live feedback and assessment

We have seen that one advantage of a smaller class is the increased possibility of live feedback on student work, and that this is in line with Brophy’s (2000) 11th principle of effective instruction: ‘goal orientated assessment’ – that is, a variety of formal and informal assessment methods to monitor progress toward learning goals. Smaller classes allow teachers to assess pupils informally during the course of everyday activities, and this can allow teachers to obtain a deeper appreciation of what children know, and consequently follow up instructional support when needed. This speaks to one of the crucial aspects of the interactive aspect of teaching. It is likely to be more difficult in a larger class to monitor every student, while in a smaller class a teacher is better able to gauge when to provide additional explanations and when they can move on so fewer students will be left behind. So rather than simply determining whether or not a student has understood a concept – a relatively limited pedagogical strategy – the teacher can dig deeper and determine the causes of any learning difficulty.

The advantages of a smaller class therefore seem clear, but what about a larger class? At the heart of the problem about providing live feedback in large classes is the problem about individual attention. In a situation where the teacher faces a large class of over 30, say, the management of the rest of the children while attending to the assessment of the individual pupil or small group is problematic. It is therefore worth considering whether there are alternative ways of managing feedback and live assessment.

For instance, as described in [Chapter 4](#), the authors visited a primary school in Oxfordshire where pupils in a class of 34 received live feedback in groups, assessment was based on teacher and peer groups judgements, and the school prioritised live feedback and had a policy of not taking marking home.

Dangers of individualisation: Over-realising the potential?

The implicit pedagogy of many UK teachers stresses the value of maximising the individual support for individual pupils, and the TQ results showed clearly that teachers prefer to have more opportunities for individual attention and individual support for children, especially those who are struggling. However, we query whether this is always the best use of their time.

One of the ways increased individualisation may not be pedagogically valuable is if the increased freedom then leads too easily into personal and social activities and goals. This is an additional but related point to that made above about management versus learning goals. Zahorik et al. (2002) found that teachers in small classes that included pupils with the least impressive academic gains fell into this trap. The logic here is that a more child-directed environment possible in smaller classes – one in which pupils have more choice over activities – needs to be treated cautiously if it takes away the focus from learning goals. ‘In short, teachers in reduced-size classes need to seize the moment and redouble their efforts to increase the academic learning of their students’ (Zahorik et al. 2002, 16). Similar ideas about the need for a constant vigilance when it comes to maximising learning opportunities in smaller classes can be found in Brophy (2000).

A key theme, therefore, is to ensure we do not get seduced by smaller classes into a freer but less productive use of time and to ask whether we may be missing their pedagogic potential.

Consideration of concerns over the social pedagogic value of individualisation also suggests to us that teachers can invest time more efficiently through alternative interactive contexts – for example, teaching to groups and developing collaborative group work. We consider these contexts in more detail below.

Differentiation

First, though, we look at a closely connected aspect of pedagogy to individualisation – differentiation. One of the key drivers of the desire for

more individual attention is to provide the differentiated input teachers feel is essential. As we have seen in several chapters, and especially [Chapters 7 and 9](#), differentiation of teaching and pupil tasks, to match the learning needs of all the individuals in the class, is perhaps the greatest challenge facing the teacher of a large class. One of the strongest pedagogical justifications for a smaller class is that it allows more potential for differentiation.

The need for differentiation connects strongly with the types of pupils in the class. We saw in [Chapter 9](#) that differentiation is necessary when there is a wide diversity of attainment levels in the class, as is common in British primary schools. The inclusion of pupils with special educational needs and disabilities (SEND) in mainstream schools can result in difficult decisions regarding classroom organisation and management, and these are likely to be affected by the classroom context; specifically, the number of pupils in the class.

It is obviously important to think through appropriate pedagogies for pupils with SEND, but it is also important to be aware of the educational contexts within which teachers have to work and which can make pedagogical strategies effective or not. We have seen throughout this book that one of the key ways in which teachers usually provide differentiation is through individual attention, but there is no point in having such a pedagogical strategy when the reality is that this is impossible to achieve with the size of class the teacher has to manage.

We repeat the point made in [Chapter 9](#): if individualised attention is so difficult to achieve, and the use of TAs to provide it is problematic, then this reinforces the value of thinking through group-based approaches to differentiation. The four common forms of differentiation we found in relation to pupils with SEND (see [Chapter 9](#)) were largely based on individual attention and the use of TAs; rethinking differentiation in terms of group-based teaching can be both efficient and valuable, for example through the setting of group-based tasks and instruction. We say more about group-based teaching below, but before that we look at more strategic ways of using TAs and other adults.

Using extra adults in the classroom

The strategic use of TAs

We saw in [Chapter 9](#) that TAs have become, in effect, the main way that schools in the UK have tried to apply inclusion in the face of large

class sizes. TAs have been used to provide differentiated instruction when schools have a wide diversity of attainment levels, and we saw in [Chapter 9](#) that TAs are a consistent and central feature of the educational experiences of pupils with SEND in both primary and secondary schools.

As we said, the increase in TAs had much to do with class sizes; it is difficult enough for teachers to manage a class of say 30 pupils under normal circumstances, but their task can be made more challenging when some of these pupils have SEND. We have seen from the DISS study that TAs often support pupils with SEND and that teachers find this helpful because they can then better attend to the rest of the class. However, we have seen that using TAs in this way lets down the children with the highest level of needs. The key problem is the, understandable but inappropriate, way TAs have been used as an informal alternative form of provision to hard-pressed teachers, and this is compounded by the lower level of classroom talk from TAs and the lack of time for preparing TAs to work with such pupils. It is widely recognised that what pupils with SEND need above all else is careful attention and monitoring from trained teachers, and we have seen that this is difficult to achieve with large class sizes.

Following the DISS project, as well as concerns about the inappropriate use of para-professionals in the education of pupils with SEND in the USA (Giangreco et al. 2005), there was therefore a clear case for challenging the status quo: that is, institutional arrangements and classroom practices that result in pupils with SEND having less time with teachers, and more time with TAs, relative to other pupils. In [Chapter 9](#) we described the Wider Pedagogical Role (WPR) model, with the components deployment, preparedness and practice, developed in Blatchford et al. (2012), which is designed to be an explanatory framework but also as a useful organising structure for rethinking the management and deployment of TAs in ways that can make them more effective. Guidance for schools and teachers can be found in Webster et al. (2016) and guidance for TAs can be found in Bosanquet et al. (2016).

Extra teachers

Another obvious solution to the problem of large class sizes is not often discussed (no doubt because of the obvious problem of costs involved). This is to use extra teachers to provide the individual differentiated high-quality instructional support needed, especially in the case of continuing large class sizes and wide student diversity. This strategy, used flexibly,

may be affordable and, while more expensive than TAs, could overcome the main problems with using them. This approach is being adopted and tested in Norway as a result of a government-led initiative there (see Solheim and Opheim 2019).

As with TAs, the use of extra teachers does not in itself provide a strategy: it still leaves open questions about how these extra teachers would be deployed. There are a number of alternative forms of deployment, for example, to conduct individual or small group pull-out interventions, team teaching with the class teacher, within-class individual support, etc. Solheim and Opheim (2019) discuss alternative ways of using extra teachers.

For several teachers in the CSPAR study who had responsibility for pupils with SEND it was the provision of extra teaching time that was of most help; with it, they could plan for a division of labour that enabled quality teaching. For example, extra time allowed grouping practices to be used to maximise the input of two teachers, and powerful, focused teaching could be built on identifying the strengths and weaknesses of individual pupils.

Teaching small groups

We now return to the third interactive context within classrooms. We have seen the issues connected to whole class teaching and the understandable drive in smaller classes to provide more individualisation but also some of the potential pitfalls. As we saw in [Chapter 4](#), however, there is another interactive context – within-class groups – and in our view a more considered, strategic approach to this context can help release its pedagogical potential. We argue that this can follow two specific routes: first, teaching to small groups and, second, collaborative group work in small groups.

We have found that both these routes are uncommon in British schools: that is, teaching to small groups is rare and does not seem generally well thought-through, and pupils also spend little time working together on tasks. For most of the time, the grouping practices are little more than a way of managing the seating arrangements.

As outlined at the ends of [Chapters 4](#) and [5](#), we suggest more can be done to encourage teaching to small groups. One way that teachers can seek to maximise individualisation and differentiation is to avoid the time-consuming attempt to somehow connect with individual pupils, one at a time, and instead organise 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 maximise 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 overall 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.

Collaborative group work

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 minimise the teacher’s input and encourage pupils to have more control over the learning that takes place.

As we have said, although pupils are often allocated to small within-class groupings there is little evidence of pupils working collaboratively in these groups. This is unfortunate given research showing that collaborative group work has a positive impact on learning and skills of negotiation, communication and argumentation and it is increasingly realised across the world that students not only need to acquire knowledge but also the desire and skills to work well together. We have seen that 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, Hattie 2009).

Group work may be particularly helpful for teachers with large numbers of pupils, in terms of maximising their own time with other

pupils, while encouraging independence in learning. Interestingly, as stated earlier, we have also found that group work is less likely to be seen in small classes, probably because of the natural tendency to devote more time to individual attention. The case for group work is therefore strong for all class sizes.

As described in [Chapter 6](#), without effective strategies for teachers to promote successful group work in everyday classroom settings, attempts to implement and utilise group work often result in frustration among teachers and pupils and the marginalisation of collaborative group work within the curriculum (see Kutnick and Blatchford 2014). In [Chapter 6](#) we looked at the SPRinG project, which designed and implemented a new approach to group work in primary and secondary school settings in the UK. As described in that chapter, the SPRinG project 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.

We have argued, therefore, that there are two ways in which the third interactive context of small within-class groupings can be used pedagogically to maximise the potential of small and large classes. 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 we have seen resulting from large classes.

Relationships

The above discussion, centred on [Figure 10.1](#), summarised three aspects of relationships within school classrooms: teacher–pupil relationships, relationships between peers and more general aspects of relationships in the classroom, including a psychological sense of community and connectedness.

Relationships in the classroom can be seen as underpinning and informing many teaching and management decisions and, as we suggested above, relationships can be considered in the same way as differentiation, as a kind of second-order factor. Relationships are central to the idea of a social pedagogy of classroom learning.

The most obvious way to consider relationships is in terms of those between teachers and pupils. When allocating pupils to groups

or differentiating work the teacher will draw on what she or he knows about their abilities, temperament, personality and their relationships with other pupils, and this will be aided by the more in-depth knowledge of individual pupils. Relationships are vital to classroom life, not least because successful instruction and support depends on the quality of the relationships in the class. The instructional and the relational are closely interconnected: for example, teacher morale is increased in smaller classes, which in turn means the class is more manageable, which means that students see the class as a warm and accepting place, which in turn means that the quality of support and instruction is enhanced.

In our visits to schools we have seen many examples of some teachers quickly establishing classroom order, such that at a signal pupils can quickly stop what they are doing and focus their attention on the teacher. Yet in other classrooms the teachers do not seem to have established the ground rules, and no matter how hard they try, some pupils do not easily attend to what is being asked of them. Obviously, successful classroom control will be affected by the kinds of pupils in the class, but one underlying factor behind a productive classroom and attentive pupils is the quality of the relationship teachers have established with their pupils. The nature of the relationship and its creation is a highly complex thing, and it is fascinating how many teachers do it implicitly – but then relationships in everyday life are mostly implicitly developed, not contrived. It seems clear that strictness and punishments are not enough – this might ensure order in the short term but is likely to lead to passive and subservient pupils. Much better is the development of a relationship in which the teacher is necessarily in charge but within which a trust develops which allows degrees of freedom and a mutual focus on learning not control.

The quality of relationships between teachers and pupils is important in classes of any size, and can help pupils in smaller and larger classes develop greater pupil autonomy and independence, thus releasing the teachers to devote themselves to pupils who need more direct support. The strategy here is in a sense to ‘make a virtue’ of the limitations of a larger class and to avoid the potential pitfalls of a smaller class. Trust is a fundamental aspect of relationships, and facilitating pupil autonomy, so the loosening of overt control and attention has to be built on the foundation of trust established by the teacher over time. Problems can arise when the trust of the teacher is not developed enough to let go of the reins. Obviously, much depends on the teacher – a more experienced and confident teacher, for example, could relax more and

tolerate a higher level of minor rule breaking (see also Galton et al. 2015; Pollard and Tann 1993).

Teacher–pupil relationships are clearly important, but we have argued in this book that relationships between pupils are also crucial, and are also affected by class size. In [Chapter 6](#) we saw the importance of peer relationships within the classroom and raised questions about what teachers can do to help develop high-quality relationships. We are not suggesting there is a serious problem with teachers’ management of peer relations. What we are suggesting, however, is the value of encouraging productive relationships between pupils within the class which also benefit learning. This is of value not only in large classes, in that it could help teachers make best use of more limited time with each pupil, but also in small classes (where, as we have seen, we tend to find less group work taking place) and as a drive to individual attention from teachers.

In [Chapter 6](#) we referred to the SPRinG project’s emphasis on a ‘relational approach’ to develop collaborative learning and group-work skills. This is perhaps particularly important in large classes because the teacher is less able to monitor each group. In brief, working on the basis that one cannot just put children into groups and expect high-quality group work, group-work skills need to be developed through a developmental sequence, starting with the development of trust and dealing with conflict, and moving through basic communication skills such as taking turns, active listening, giving and asking for help etc., and on to what we called ‘advanced’ group-working skills such as making group decisions, compromises and coming to a consensus. The key aim of value in large and small classes is to encourage pupil independence rather than directly teaching pupils. The rationale and principles of the SPRinG project are set out in Baines et al. (2017).

We also mentioned above the broader aspects of relationships. The key idea here, in line with the first of Brophy’s twelve principles of effective instruction (Brophy 2000), is that children learn best in cohesive and caring learning communities – what he calls a ‘supportive classroom climate’. Brophy argues this is more easily attained in small classes. This may be the case, other things being equal, but the adoption of a relational approach, as just described, could be part of a deliberate drive to cultivate a sense of community in classes of all sizes.

Tasks and curriculum

We saw in [Chapter 6](#) that the pedagogical implications arising from the data on class size and tasks and curriculum overlapped with those

addressed in other chapters. We saw that differentiation of pupil tasks, to match the learning needs of all the individuals in the class, is, as also discussed above, perhaps the greatest challenge facing the teacher of a large class. This is especially difficult when the class contains pupils with SEND, as it extends still further the range of pupil needs and attainment levels within the class. One solution we suggested at the ends of [Chapters 4, 5 and 8](#), and also in this chapter, is to think through more carefully the positive possibilities of group-based teaching and task allocation, because individual support is not possible for all in a large class, and whole class teaching is found to be unsatisfying because it cannot easily provide differentiated teaching.

Other pedagogical strategies are related to the types of tasks. We saw in [Chapter 8](#) that worksheets, which we found can be used as a way of coping in large classes, need to be allocated sparingly and strategically. We also saw that one way of dealing with the practical difficulties of setting up certain kinds of tasks (particularly practical activities, in large classes, for example, because of safety concerns and resourcing) is to ‘stagger’ work so the rest of the class can be doing independent tasks as the teacher works on practical tasks with groups in turn.

We also in [Chapter 8](#) made the point, now reinforced by our discussion on group work in this chapter, that teachers should be doing all they can to encourage independent learning so that the rest of the class can be working independently on other tasks when a teacher is working with someone else. Schools should develop pupil independence as early and as much as possible, to allow teachers more freedom to give attention to individuals and groups.

We also mentioned the potential role for TAs here. In order to put on labour-intensive activities like practical and investigative activities, one strategy is to deploy TAs to help manage these. To avoid the flaws in TA deployment mentioned in [Chapter 9](#) and in this chapter, such deployment should be designed to complement and support the teacher and not, as is often the case, substitute for the teacher. The TA can also take on other roles, for example, a ‘roving’ role to supplement the more targeted support given by the teacher to certain groups and their activities. Differentiation of tasks can be managed more easily with a TA.

Administrative aspects of teaching

We saw evidence in [Chapter 8](#), and also elsewhere in this book, of the way a large class adds to the amount of marking, assessment and record

keeping. At the end of [Chapter 8](#) we looked at what steps might be taken to help. We argued that if class sizes and the curriculum, at least in the short term, are ‘givens’ and difficult to change then perhaps we need to go back to basics and ask fundamental questions about the purpose and need for, for example, marking, assessments and record keeping. We looked briefly at the literature on assessments in schools and showed that it now leans towards the view that marking pupil ‘products’ after the event has limited formative value for the pupils. More valuable are formative assessment opportunities arising in the moment by moment informal interactions between teachers and their pupils.

Concerns about the excessive workloads resulting from large classes led us in [Chapter 8](#) to argue for rethinking the type of assessments and record keeping common in schools, which teachers with large classes struggle with. We mentioned some possible strategies, including the creation of a school level ‘audit’ of the existing record keeping, assessments and marking that takes place, followed by a critical reflection on the value of existing practices. We gave the example of one primary school where they had taken a radical look at assessment arrangements in the school and moved to a prioritisation of verbal feedback to individuals and groups. We also referred the reader to a recent helpful report on reducing teacher workload by Richardson et al. (2018), summarising initiatives in schools designed to reduce teacher workloads, including marking and assessments.

Size of teaching groups

But any change to assessment practices, along with the other suggested pedagogical changes suggested here, can only be at best a partial solution to the problems teachers have with large class sizes. It seems clear that a class size of over 30 will inevitably lead to excessive administrative demands and other problems, which we have argued are not factored into the common view that class size is not important.

There is a key classroom contextual issue here, which is the underlying need, especially in the case of pupils with SEND, for a small teaching unit to provide the degree of individual quality attention required. As we have said elsewhere, problems stem from the pedagogical requirement (of individualisation) being out of line with classroom contextual realities. The constant frustration we have heard from teachers in this book is the conflict between a recognition of the need for individual attention and feedback, on the one hand, and the

difficulties of providing that with existing class sizes on the other hand. Hence the reliance on TAs.

There seems therefore little alternative but to try as far as possible to reduce the size of the teaching groups for pupils with SEND while at the same time ensuring that the amount of high-quality attention from teachers is not reduced. This is the last component of our model in [Figure 10.1](#), and extra to the other classroom processes and contexts. It is appreciated that this is expensive but seems essential. This is standard in special schools and in Units or Additional Resource Provision in mainstream schools. A small teaching unit does not guarantee quality teaching, of course. We have mentioned anecdotal evidence about how relatively small low-attaining sets in secondary schools can still be unsatisfactory because of the low expectations and curriculum challenge pupils experience. We have also experienced small class teaching in special schools that was exceptional in terms of the social and emotional support provided but very limited in terms of the focus on learning, even given the existing levels of the pupils involved.

All the pedagogical implications discussed in this sense can benefit from a smaller teaching unit.

Conclusions

In this chapter we have pulled together the results presented in each chapter in the book. We have seen the interconnectedness of classroom processes connected to class size and looked at previous models of classroom effects. We presented in [Figure 10.1](#) a summary model of effects. We have looked at the classroom as a system and seen the importance, when it comes to class size, of how best to make adaptations to class size differences. We introduced the idea of a social pedagogy of classroom learning and the idea of realising the social pedagogical potential of interconnections between classroom elements. We summarised in [Box 10.1](#) some specific ways in which we can realise the social pedagogic potential of classroom elements.

The work in this chapter and the book as a whole is a start but we believe there is more work to be done to build a social pedagogy of classroom learning. This will involve interrogating and integrating existing analytical frameworks of classroom influences on learning. It is hoped that enough has been said to show that what is intended here goes beyond the role of classroom context in models of teacher effects

on learning, work on 'classroom environments' and ecological influences on development – each of which have a more narrow and limited application. It will involve the search for and testing of a framework to represent influences and processes identified.

We now need to draw out policy and practice recommendations from our work. This is our task in the final chapter of this book.

Conclusions

In this book we have taken a hard and extended look at the class size issue. We have analysed a wide range of data from the large scale CSPAR project and other studies based at the UCL Institute of Education. We have closely investigated the many responses from teachers, headteachers and TAs in the questionnaire surveys; we have gone over the rich interview and observational data from the case studies of large and small classes; we have looked in detail at the extensive systematic observation studies of the moment by moment behaviour of pupils and teachers in large and small classes; and we have also looked at allied systematic observation data from the DISS project and studies of pupils with special needs (SEND) (the MAST and SENSE studies). We doubt that there is such an extensive set of data across the world relevant to understanding class size effects. In this chapter we draw out some conclusions from our research on class size.

We appreciate that this book has a lot of material in it for the reader to digest. In this age of tweets, blogs and social media we are very aware that many readers desire a short, quickly accessed statement. But we became more and more of the view that a book-length treatment of the class size topic was warranted. It allowed us to provide a full account of class size effects, emerging from our data, as well as formulate a comprehensive way of thinking about class size effects, which we believe also helps us resolve puzzles about class size effects that have continued to underpin commentary for decades.

Two key features of this book are, first, to arrive at a new way of thinking about class size effects which incorporates the realities of classroom life and, second, to identify pedagogical implications related to class size changes. We hope that this book will help move the debate

about class size into a more useful and productive discussion. There is still much we do not know about the educational and pedagogical consequences of class size differences, and – with apologies for the predictable call from researchers – there is still a lot of research that needs to be done. We address more specific areas of future research later in this chapter.

We begin with a statement on what we think is an overriding point that stems from our analysis of factors related to class size.

Fallacy of the single cause

We argue that we need to move beyond an analysis of class size in terms of the single cause, which we feel has bedevilled debates over class size. We have seen that much of the research and policy narrative about class size is in terms of the extent to which it affects or causes changes in pupil attainment. Common ways of addressing the effect of class size have followed this approach and have contributed to a view that one can identify a specific size of class size effect and compare this with other educational interventions. We have argued in this book that this is too simple an approach. It overlooks the way class size exerts pressures through its interconnections with many classroom processes, which, when taken together, have implications for learning, behaviour and attainment in school.

Class size is not something one adds to the classroom, like an intervention in reading, but is rather an inevitable environmental aspect of every classroom that, from the outset, exerts a number of inevitable pressures on what goes on there. We argue that the search for, and judgement about, simple associations between class size and academic attainment is too limited and has fuelled a false and tired debate about class size effects.

Of course, there are many studies in the social sciences and education which look at multiple causes and also moderator variables. Many researchers might argue that the statistical models they use are sophisticated because they have moved beyond models with single predictor variables to include multiple causal variables and even moderating/mediating factors. These days it is also common for statistical models to capture the nested sources of variation often found in the real world, for example, because children in the same school class tend to be more similar than those in different classes. Often these

considerations are handled by multilevel regression type analysis, and indeed this was the kind of statistical modelling we used to analyse effects in the KS1 and KS2 phases of the CSPAR research (see Blatchford et al. 2002a; Blatchford et al. 2003b).

But we argue that this approach still tends to consider class size as a single cause. Where there has been an attempt to look at interaction effects, we think it's fair to say that these have mostly been child factors like attainment level, not the kinds of potentially interacting classroom factors we have in mind, such as, for example, teaching approaches, tasks and curriculum. There is little research we are aware of where possible classroom-based explanatory variables are entered into analyses.

Further, having put together all the classroom process data in the various studies we have conducted, we are more and more of the view that more is needed – beyond even sophisticated statistical analyses – to fully grasp the effect of class size. Put simply, the stats may be sophisticated, but the basic underlying model of classroom influences is not. For researchers who have often used quantitative methods of data collection and analysis, it may seem surprising (even to us) to say that we are not sure that any kind of numerical analysis, no matter how complex, will ever be able to model the complexities of how classroom influences work, as shown, for example, in [Figure 10.1](#).

As we said near the end of [Chapter 6](#), it is also questionable whether a precise numerical estimate of the effect of class size will ever be achievable or make sense, because what this book has shown is the way class size is embedded in complex relationships with teaching, classroom management, administrative aspects, the formation of relationships between the children, the composition of the class, and so on. In this sense, we see again the fallacy of searching for the single cause and single effect.

Fallacy of the single solution

An allied problem with the single cause fixation is that it has fed into a simplistic view that there are also single solutions to complex educational problems. For a variety of understandable reasons, schools are increasingly looking for relatively easy ways to address intractable problems, while at the same time they are encouraged to become more evidence-engaged and informed. It almost inevitably means that resources such as the Sutton Trust-Education Endowment Foundation Teaching and Learning Tool Kit attract attention, because they are deliberately

presented in an easily accessible league table with scores allowing comparisons between competing interventions: feedback, grouping, TAs, and so on.

Aside from the debates about the way these approaches treat evidence and how they are constructed, the perhaps unintended consequence is that schools see things in isolation and not in terms of a more holistic classroom or school ecology, where different parts interact with one another and produce different effects. UK policy initiatives like the ‘pupil premium’ have exacerbated this, because schools are allocated the funds (provided for pupils judged to be on low incomes, generally based on the number of pupils eligible for free school meals), and the official advice is then to look at what interventions are supported by research as the means to select an appropriate intervention to help their pupils. In England and Wales ‘pupil premium’ funds are then, in a sense, used to lay a bet on a single horse.

Addressing the aims of the book and solving the two class size conundrums

As described in [Chapter 1](#), this book addresses four main aims, which are to:

1. critically review this evidence on the connection between class size and academic attainment
2. better understand the connection between class size and classroom processes
3. conceptualise how class size works and interconnects with classroom processes
4. draw out the implications for pedagogy, that is, what it means for classroom management and teaching.

In this section we summarise what we have learned about each of these and draw out the implications for practice and policy. We will also sum up our answers to the two Class Size Conundrums (CSC1 and CSC2), first identified in [Chapter 1](#), where they are provided in full in [Box 1.2](#). These were, in brief:

- CSC1: How can we reconcile negative and positive views about class size effects?
- CSC2: Why are the effects of class size not more pronounced?

Aim 1: Critically review the connection between class size and academic attainment

The first aim of this of this book was to critically review the evidence on the connection between class size and academic attainment. This is what we referred to as the ‘first generation’ of research on class size, and the basic material for much of the debate and commentary on class size.

In [Chapter 3](#) we reviewed the evidence and showed that the effects of class size on academic outcomes are clearest with the youngest students in school. The CSPAR research found effects in the first two years in particular. The policy implication seems clear and supports smaller class sizes in the first years of school. In the CSPAR study the effect of small reception (first year) classes carried over into Year 1 (second year) only when children moved into a similar or smaller class. We found that moving from a smaller to a larger class size between the first and second year of schooling had a significant ‘disruption’ effect on children’s educational progress. We are not aware of any other studies which have addressed this issue of continuity in class sizes over years and the policy implication seems to be to maintain smaller classes where possible. Our results, like others’, also suggest that smaller classes are particularly needed for those pupils with lower attainment levels. We also argue on the basis of the CSPAR attainment results that it is probably over-simplistic to talk about optimal class sizes in an exact way or threshold levels below which, or above which, effects on academic attainment are more pronounced.

We also made the point that we need more ‘first-generation’ research on class size effects, that is, high-quality, purposefully designed studies of class size and pupil outcomes. To our knowledge, there are no dedicated studies of class size and pupil outcomes currently or recently in the UK, the United States, Australia, Canada or New Zealand, and we find this worrying.

In the DISS systematic observation study we found that there was more pupil on-task and less off-task behaviour as class sizes decreased, and conversely less on-task and more off-task behaviour as class sizes increased. This was a very clear finding which we feel is educationally significant. But we also found that the relationship with class size was affected by the pupil’s attainment group. At secondary level, it was only the low-attainers who showed more off-task behaviour as class sizes increased. For illustrative purposes we compared a large class of 30 with a small class of 15 and this showed a difference of about 10 per cent

in on-task behaviour for low-attaining pupils. In the case of off-task behaviour, at primary level it was the low- and middle-attaining pupils who showed most off-task behaviour in larger classes, and at secondary level it was again the low-attainers who tended to be most affected.

These results show that large classes are a particular problem for older pupils who are already attaining at lower levels. Similar results were found for pupils with SEND (see [Chapter 9](#)). Perhaps the most obvious policy implication on results on classroom on-task and engagement is support for targeted small classes for low-attainers and those with SEND.

But we also queried the simple certainties of test scores by which to measure effects of class size. We drew attention to how the exclusive concern with academic test scores in first language and mathematics has had a narrowing effect on research. There has been a lack of attention to, and research on, class size in relation to other pupil ‘outcomes’. On the basis of teachers’ reports and our own observations there are some obvious contenders: as well as classroom engagement, which we looked at in [Chapter 3](#), we can include development in non-core subjects, creative and practical skills, enthusiasm and confidence, problem solving and critical thinking, ability to learn independently, and motivation. Focusing only on academic attainment misses important features of classroom life which may be affected by class size and are likely to be vital for effective teaching and learning.

We believe that future first-generation research will therefore need to widen the approach to pupil ‘outcomes’; as well as progress in the core subjects of first language, mathematics and science, there should be attention to progress in other areas, including practical and creative subjects, where the effects of class size may indeed be more marked.

Solving CSC1

As we said at the end of [Chapter 3](#), we think we have found a probable solution to CSC1: *How can we reconcile negative and positive views about class size effects?* The gap between the views of practitioners and the evidence from researchers, policy makers and others – identified in CSC1 – is likely because the two lobbies have different kinds of pupil outcomes and a different model of effects in mind. The modest results from research and policy has focused on academic test results and posits a simple causal input/output model. But teachers’ confidence in small class effects is based on a wide perception of pupil functioning and a more complex, interconnected set of processes. We feel this difference in focus helps to account for the two different points of view.

As we also said in [Chapter 3](#), when thinking about the effects of class size, teachers are probably more concerned with learning as an ongoing process that takes place in their classrooms over time, and not with academic attainment as measured at a given point in time. Teachers, in other words, are concerned with class size effects in a more dynamic way as these affect the conditions for teaching and the everyday processes of learning.

Aim 2: Better understand the connection between class size and classroom processes

The second aim of this book was to examine the way that class size affected classroom processes. This is what we have called the ‘second generation’ of research on class size. Our work on these processes is reported in [Chapters 4 to 9](#) in this book and is perhaps its main contribution. We drew on the extensive data from the CSPAR research programme, and the DISS, MAST and SENSE studies, including national questionnaires, case studies and systematic observations. In [Chapter 10](#) we summarised these processes that are affected by class size ([Figure 10.1](#)).

We have seen that perhaps the main point arising from our analysis of class size effects is the interconnectedness of a number of factors, rather than a single line of influence. This interconnectedness of factors related to class size is in line with the practitioner viewpoint, albeit not often explicitly expressed as such by them. The responses from teachers in the TQ surveys and the case studies, for example, repeatedly illustrated the interconnectedness of factors. Rarely do teachers, when asked about class size effects, talk about specific facets of behaviour or learning; they are more likely to talk about how class size affects space, which facilitates conflicts between pupils, which causes management issues, sometimes made worse when existing relations between pupils are poor, and when there are a few disruptive pupils in the class, which in turn causes the teacher a lot of stress and affects their well-being. Class size can get downplayed as a factor, but is important, nonetheless.

Solving CSC2

As we said at the end of [Chapter 4](#), we believe that the results we have presented on the connection between class size and classroom processes help to answer CSC2: *Why are the effects of class size not more pronounced?* As we have seen, this breaks down into two allied questions: Why don’t pupils in larger classes seem to obviously suffer? and Why don’t pupils

in smaller classes more obviously make better progress? We said in [Chapter 1](#) that this is connected to John Hattie's concern with why the effects of class size reduction (CSR) are often so modest.

We argue that if more attention were paid to these questions the answers might help us move beyond arid debate about whether CSR on its own is a good or bad thing. We have seen in this book that there are consequences of class size that are not captured by academic test scores. We saw in [Chapter 4](#) that there can be changes in the interactive context of teaching and its quality, and that it can be the teacher who suffers and takes the strain of large classes; in [Chapter 5](#) we saw effects of class size on grouping practices and classroom management; in [Chapter 6](#) we saw the consequences for the quality of peer relations; in [Chapter 7](#) we saw the implications for the kinds of tasks and the quality of the curriculum activities; in [Chapter 8](#) we saw that a large class means more marking and preparation, and filling out forms; and in [Chapter 9](#) we saw that some children in a large class may suffer more than other groups, particularly low-attaining pupils and those with SEND. None of these effects of class size tend to be captured in debates about class size, certainly not when people take the view that class size is unimportant. But just because a process is not measured does not mean it is not an important consequence of large class sizes.

Examination of classroom processes therefore, we believe, goes a long way to help explain the CSC2. One explanation is that in a large class, teachers, rather than children, take the brunt. We worry that some teachers over-compensate, for example, by spending their own time helping individuals, which can be at some cost to their own well-being. By mitigating the potential negative effects of class size, they thereby make them less marked, and this might also account for why the effects of class size on teaching are not obviously affecting pupil attainments.

Another explanation, discussed in the last chapter, is that teachers do not necessarily change the way they teach when faced with smaller classes, even though they may feel they change. There may be teacher *resistances* to adapting to class size changes; changing the number of pupils in a class may not be enough for teachers to change the curriculum and style of teaching very much. Galton's (2008) explanation for the relative lack of impact of a major class size reduction programme in Hong Kong is because teachers there adhere to the textbook for curriculum and teaching approaches. This explanation is similar to that identified by Evertson and Randolph (1989), in a study of schools involved in the STAR project, who show that the adherence of teachers to the mandated

curriculum in Tennessee may have minimised differences between small and regular classes.

The important point here is that it is attention to processes in classrooms connected to class size that will provide answers to the lack of class size effects, and that without such information the obvious and frequently voiced conclusion that class size is not important is likely to be seriously misleading.

Aim 3: Conceptualise how class size works and interconnects with classroom processes

The third aim of this book was to provide a new conceptualisation of the way that class size effects worked. We provided a visual representation of effects in [Figure 10.1](#), drawing on the work described in each chapter. Rather than a simple linear model, of the sort amenable to statistical analysis, this model seeks to summarise the complex classroom processes and other factors at work. We drew on models of classroom influences, existing models of class size effects, social psychology, ecological psychology and a new social pedagogy approach to help understand the effects of class size. We suggested that the boxes within [Figure 10.1](#) can be considered the 'elements' in the classroom context that we have found to be connected to class size; taken together they can be considered as a dynamic system. We introduced a 'social pedagogy' approach to help show how learning in schools is not simply the result of teachers exerting an influence on pupils. Instead, learning takes place in a distinct physical and social setting within which complex, multiple decisions are taken about how best to coordinate and manage the various factors involved, including class size. We highlighted the rather neglected field of ecological psychology, for the insights it provides on the contextual influences on behaviour. But we also pointed to a degree of environmental determinism in this approach, which led us to articulate a social pedagogical approach that also factored in how teachers make decisions and adapt to the classroom elements and class size.

This adds to our solution of CSC2. A key insight we derive from the work on classroom processes matches a point made above: teachers employ complex adaptations, whether consciously or not, to adapt to the number of children in their classroom, and this means that the effects of class size are never fixed. The effect of class size, in other words, depends on a network of classroom organisational and interactive compensations made by the teacher. From this point of view there is not a *necessary*

impact of class size on attainment; rather it all depends on how the teacher manages large and small classes.

Aim 4: Draw out the implications for classroom management and teaching

The fourth and final aim of the book was to identify pedagogical implications related to class size differences. How should teachers adapt to class sizes? How should they make the most of smaller classes and mitigate problems with larger classes?

In [Figure 10.1](#) we summarised pedagogical affordances connected to class size differences by collating the key pedagogical implications identified at the end of each chapter. These included, in the case of interactive contexts, seeking alternatives to whole class teaching, for example, through more individualisation in teaching and getting to know more about individual pupils. However, we also pointed out that we need to be sure increased individualisation is devoted to learning goals. We offered alternative ways of thinking about assessment in large classes.

We also saw that one of the strongest pedagogical justifications of a smaller class is that it allows more potential for differentiation, especially important in a larger class size with diverse attainment levels. Large class sizes at primary level will always be a problem because it is more difficult to provide necessary differentiation and individual support, especially for pupils with SEND. We saw that there are problems with the common strategy of deploying TAs to provide individual attention to pupils with SEND and those who are low-attaining; TAs should add value to teachers, and work alongside them, rather than replace them. There seems little alternative but to try as far as possible to reduce the size of the teaching groups for pupils with SEND while at the same time ensuring that the amount of high-quality attention from teachers is not reduced. Another strategy in a large class is providing individual high-quality instructional support by using extra teachers.

We argued that there are two ways in which the interactive context of small within-class groupings can be used pedagogically to maximise the potential of small and large classes. One is teaching to small groups within the class. This can maximise individualisation and differentiation but avoid the time-consuming attempt to connect with individual pupils, one at a time. We argued, however, that 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. 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 minimise the teacher's input and encourage pupils to have more control over the learning that takes place. There are a number of 'resistances' to high-quality group work and teachers and pupils often find group work hard and not very productive, and so the use of group work therefore needs careful development, and training for both teachers and pupils. We stressed the value of a 'relational' approach to collaborative learning and group-work skills, and this is perhaps particularly important in large classes because the teacher is less able to monitor each group.

We also looked at the pedagogical implications related to class size and the administrative aspects of teaching. We drew attention to the need to find alternatives to the excessive workloads that stem from assessments, marking and report writing, especially aggravated with large class sizes, and looked at some ways schools have been dealing with this.

Changing teaching in small and large classes: School leadership

A key theme of the book has been what kinds of pedagogical changes can help adapt to class sizes, small or large. In the course of the Leverhulme International Network study, introduced in [Chapter 1](#), we held a final two-day workshop in London. At this, as well as addressing pedagogical issues, there was also attention to school factors connected to any changes in teaching. Much of this came down to school leadership, and we briefly summarise some of the key points to emerge.

It was agreed that some form of professional development would be needed to avoid the problem, identified throughout this book, that changes to class size do not always have an effect because teaching approaches do not change. This could take the form of workshops and courses, which might be incentivised through a process of certification (this was an approach suggested but not carried through in the early stages of the CSPAR study, when Local Authorities were looking for ways of encouraging teachers to take part). There were a number of suggestions of within-school supports, such as the identification of key teachers to act as school change agents, mentors to support and facilitate change in teaching and joint planning sessions. There were also suggestions about cross-school collaborations, made easier when schools are part of a local education authority or multi-academy trust.

A final suggestion was for attention to the kinds of adaptations described in this book, as part of initial teacher training. It seems to us important, in any case, for beginning teachers to be made aware of the classroom contextual aspects affecting teaching, including the number of pupils. In the Leverhulme International Network we became aware of exciting professional development work in Hong Kong, connected to class size changes (Galton et al. 2015; Galton et al. 2019; Harfitt et al. 2019).

Future research

We have remarked repeatedly that there are very few high-quality dedicated studies of class size effects. Here we offer some suggestions for future research on class size effects, connected to all three generations of research on class size.

In the case of first-generation research, 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 we have explained elsewhere in this book.

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 experienced class sizes (not PTRs) in relation to a range of pupil outcomes, whilst also factoring in variables 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 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.

It is sometimes assumed that classroom processes like teaching necessarily need to be studied using qualitative methods. This might be one reason why the number of studies which have designed and used measures of classroom processes alongside class size are very small in number. It is easy to see how the magnitude of the research task might well put people off. But what we are suggesting here is a bold move to adequately fund dedicated *quantitative* studies that combine

first-generation studies (class size in relation to academic outcomes) and second-generation studies (class size in relation to classroom processes).

But in line with our comments on the limits of any quantitative research project, no matter how sophisticated, we also suggest the value of high-quality qualitative studies of selected aspects of class size effects. Several directions of research are suggested by chapters in this book, for example, connections between class size and peer relations and class size and non-core pupil outcomes.

We also need high-quality third-generation studies 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. There are suggestions in [Chapter 10](#) about possible pedagogical changes that might be used, for example, collaborative group work.

As explained at the end of [Chapter 10](#), we also believe there is more work to be done to build a conceptualisation of class size and classroom learning. This will involve interrogating and integrating existing analytical frameworks of classroom influences on learning, and further testing of a framework to represent influences and processes identified.

This book has been about class size. In several places we have considered the use of extra teachers and TAs, and this points to the broader issue of using staff in more flexible ways. We have mentioned research in Norway which is resourcing and evaluating extra teaching staff (see Solheim and Opheim 2019), and it seems to us that more research on flexible ways of using staff would be valuable. We have not the space here to examine what some have called ‘innovative learning environments’ but recognise their importance and the value in more evaluation of flexible use of school space, for example, the use of multiple teachers working in large spaces. We do not have specific evidence for this, but our impression is that the majority of school learning environments are still single classrooms, usually with single teachers.

In addition, we can do more to learn from an international perspective. The Leverhulme-funded International Network on ‘Class size and effective teaching’ illustrated the way that better understanding of what counts as effective teaching can come from a comparative approach. But it also illustrated a number of complexities that need to be taken into account. We have seen that in East Asian countries class size reduction programmes have been introduced, in part inspired by Western research and by a desire to introduce more learner-centred approaches where the amount of teacher lecturing is reduced and critical thinking and group work encouraged. Recent research in African countries suggests that very different conditions of teacher employment and curricular and pedagogy

apply. One future direction would be to build a comparative perspective into the development of a social pedagogy of classroom learning. This will help move beyond the current tendency toward simplistic recommendations on classroom teaching methods based on approaches used overseas. It will help further test and validate the relationships between the two worlds and classroom context identified above.

Policy implications

Worryingly, the common but simplistic view that class size is not important has allowed some to voice what we believe to be misguided policy recommendations. As we saw in [Chapter 1](#), one such policy recommendation was given expression in 2018 in media reports of a conference in New York in which speakers argued that class sizes should be increased to 30 at secondary level and that it would be a better use of funds if the money was transferred to professional development for teachers. Rather alarmingly, the policy momentum right now seems to be more about raising class sizes than reducing them. It is hoped that this book has done enough to show that this view is profoundly misguided. The point made in this book – that the UK is unusual in having larger class sizes at primary in comparison to secondary schools – should not be used to justify raising class sizes at secondary to match those at primary. Our view is that the converse logic is more likely to be effective, though of course more expensive: it would be better to lower class sizes at primary to match those at secondary. Primary class sizes in the UK are already one of the largest in the OECD listings.

There is also the point, which arises particularly with regard to the systematic observation results reported in this book, that large classes (as it happens, particularly at secondary level) have a negative effect on low-attaining pupils and those with SEND. Such pupils are more likely to be off-task in larger classes and receive more negative controlling comments from the teacher. Any attempt to raise class sizes is therefore likely to favour already advantaged and high-performing pupils, who can cope in large classes, whilst making it much more difficult to support less advantaged and lower-achieving pupils. Raising class sizes would in other words be likely to disadvantage the very children who are already struggling.

At heart, it seems to us that the mistake is not having thought through the implications for teaching and teacher workloads. A view that class size is unimportant, or that class sizes could be made bigger,

might be justified if teaching were no more than delivering a lecture to pupils. In such a situation, of course, class size is less important. But as we have shown in this book, teaching is much more than just lecturing. For example, in terms of what we have said about interactive contexts for learning, large classes might be okay when delivering a lecture to the whole class, but what about supporting groups and individuals? Throughout this book we have seen a number of ways that large classes have a negative impact on teaching, in terms of the quality of teaching; the amount of individual attention; the tasks and activities teachers can set up; providing appropriate differentiation of work and teaching; setting up and monitoring high-quality group work; providing the appropriate input from additional adults in the class; finding the time for essential tasks like marking, report writing, ongoing feedback on work, etc., etc. To propose that class sizes should be raised means that these important facets have not been taken into account.

Along with the common view that class size is unimportant is the view that the most important thing is teacher quality and that funds would be better spent in training and professional development for teachers. We have seen that this is the view of Andreas Schleicher from the OECD, and the widely cited reports from the McKinsey and Company (Barber and Mourshed 2007), the Grattan Institute (Jensen 2012), and the Brookings Institution (Whitehurst and Chingos 2011). The policy implication of this is that any resources directed at reducing class sizes, or saved from increasing class sizes, should be directed at teacher training and professional development. We can probably all agree that the quality of teaching is vital. But as we have seen many times in this book, teaching needs to be considered in the context of numerous influences in the classroom and the school. In our view, what is being proposed here is a false dichotomy; posing the policy implications as being a choice between either investment in CSR or investment in teacher quality is too simplistic, and is no more sensible than saying we should invest in either teacher training or school buildings – both are clearly important.

As Anderson has said: ‘Smaller classes provide opportunities for teachers to teach better; they do not cause teachers to do so’ (2000, 7). Just reducing the number of pupils in a class is therefore only one partial component of an educational initiative. Equally important is attention to developing informed pedagogical changes in small classes (and for that matter, large classes). We feel that there should be a place in teacher training and professional development work for a close consideration of classroom contextual features, of which the number of children in the

class is one. It is flexibility in the face of changing classroom contexts that seems important.

The wider policy implications

Much of this book has been about helping teachers cope in small and large classes. We have examined pedagogical changes that teachers can make with smaller classes to make the most of the opportunities afforded. But it is not all about teachers and what steps they can take. Teachers and schools cannot be held accountable for all effects of class size.

There are two other possibilities. First, we can make changes to the external factors that make large classes so difficult. Policies of inclusion are commendable but difficult to implement in large classes, and administrative demands are inevitable with large classes. Differentiation and individualisation are difficult to achieve with large classes, as is covering the curriculum in breadth and in the depth needed for learning and engagement. Teachers can probably do more to adapt teaching to small and large classes, and we have addressed this point when highlighting pedagogical implications at the end of each chapter, with a summary in [Chapter 10](#), but we also need to consider whether there are external changes that can be made to help deal with the pressures of large classes, particularly to policies of inclusion and curriculum and assessment demands.

Second, we can be bold and reduce class sizes or do something equivalent, like providing extra teaching staff. We are aware that there are huge funding and priority issues at stake here, with many competing claims on expenditure. Schools and middle-tier structures like local authorities and academy chains, especially in the recent years of austerity, have been faced with limited funds. We are also aware that any policy directed at class size reduction will be expensive and would need a strong justification.

There are two priority groups in our view. 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. A main structural change would be to address this. The clearest implications are class sizes at lower primary (KS1, 5–7 years).

But there is a second group. If we have learned one thing in this book, it is how smaller classes clearly have a particular role in providing a favourable classroom context for supporting low-attaining children

and those with SEND; conversely, these two groups are most likely to struggle in large classes. We have seen that 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 learning problems would benefit from smaller groups/classes.

Final word

In the first chapter of this book we started by saying that one of the most basic but under-recognised things about the classroom is that it often comprises one teacher and multiple children – and sometimes, as in England, over 30 children. We have shown in this book that both teachers and pupils are influenced in profound ways by properties and characteristics of the classroom environment, and in particular by the number of pupils. There has been a lot of discussion of class size of course; we hope we have shown that much of the debate has often taken place in ignorance of the very real effects evident when one looks closely at what goes on in classrooms.

Our simple conclusion at the end of this book is that, yes, class size matters. We think that over-attention to the association between class size and pupil attainment ‘outcomes’ has for too long distracted attention away from the real consequences of large class sizes in schools. In our view it is time to reclaim the class size debate so that we attend to the *educational* consequences of class size. Amongst other things, class size affects the interactions in the classroom and their quality, and the time teachers have for marking, assessments and understanding the strengths and weaknesses of individual pupils.

References

- Achilles, Charles M. 1999. *Let's Put Kids First, Finally: Getting Class Size Right*. Thousand Oaks, CA: Corwin Press.
- Achilles, Charles M. 2000. 'Should Class Size Be a Cornerstone for Educational Policy?', *National Center on Education in the Inner Cities (CEIC) Review* 9 (2): 15–23.
- Ainscow, Mel. 2007. 'From Special Education to Effective Schools for All: A Review of Progress so Far'. In *The SAGE Handbook of Special Education*, edited by Lani Florian, 146–59. London: SAGE Publications.
- Alborz, Alison, Diana Pearson, Peter Farrell and Andy Howes. 2009. *The Impact of Adult Support Staff on Pupils and Mainstream Schools*. London: EPPI-Centre, Social Science Research Unit, Institute of Education.
- Alexander, Robin. 1992. *Policy and Practice in Primary Education*. London: Routledge.
- Alexander, Robin. 2001. *Culture and Pedagogy: International Comparisons in Primary Education*. Malden, MA: Blackwell.
- Alexander, Robin. 2004. *Towards Dialogic Teaching: Rethinking Classroom Talk*. 2nd ed. Cambridge: Dialogos.
- Alexander, Robin, ed. 2010. *Children, Their World, Their Education: Final Report and Recommendations of the Cambridge Primary Review*. London: Routledge.
- Alexander, Robin, Jim Rose and Chris Woodhead. 1992. *Curriculum Organisation and Classroom Practice in Primary Schools: A Discussion Paper*. London: Department of Education and Science.
- Anderson, Lorin W. 2000. 'Why Should Reduced Class Size Lead to Increased Student Achievement?'. In *How Small Classes Help Teachers Do Their Best*, edited by Margaret C. Wang and Jeremy D. Finn, 3–24. Philadelphia: Temple University Center for Research in Human Development and Education.
- Anderson, Lorin W. 2002. 'Balancing Breadth and Depth of Content Coverage: Taking Advantage of the Opportunities Provided by Smaller Classes'. In *Taking Small Classes One Step Further*, edited by Jeremy D. Finn and Margaret C. Wang, 51–62. Greenwich, CT: Information Age Publishing.
- Angrist, Joshua D. and Victor Lavy. 1999. 'Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement', *Quarterly Journal of Economics* 114 (2): 533–75. <https://doi.org/10.1162/003355399556061>.
- Annevelink, E. 2004. *Class Size: Linking Teaching and Learning*. Enschede: Ipskamp.
- Araceli Ruiz-Primo, Maria. 2011. 'Informal Formative Assessment: The Role of Instructional Dialogues in Assessing Students' Learning', *Studies in Educational Evaluation* 37 (1): 15–24. <https://doi.org/10.1016/j.stueduc.2011.04.003>.
- Arends, Richard I. 1994. *Learning to Teach*. 3rd ed. New York: McGraw-Hill.
- Associated Press and Elizabeth Chuck. 2018. 'Arizona, Colorado Teachers Rally: Schools Close for Second Day', *NBC News*, 27 April. Accessed 8 April 2020. www.nbcnews.com/news/us-news/arizona-colorado-teachers-rally-schools-close-2nd-day-n869521.

- Baines, Ed, Peter Blatchford and Anne Chowne. 2007. 'Improving the Effectiveness of Collaborative Group Work in Primary Schools: Effects on Science Attainment', *British Educational Research Journal* 33 (5): 663–80. <https://doi.org/10.1080/01411920701582231>.
- Baines, Ed, Peter Blatchford and Peter Kutnick. 2003. 'Changes in Grouping Practices over Primary and Secondary School', *International Journal of Educational Research* 39 (1/2): 9–34. [https://doi.org/10.1016/S0883-0355\(03\)00071-5](https://doi.org/10.1016/S0883-0355(03)00071-5).
- Baines, Ed, Peter Blatchford and Peter Kutnick. 2017. *Promoting Effective Group Work in the Primary Classroom: A Handbook for Teachers and Practitioners*. 2nd ed. London: Routledge.
- Barber, Michael and Mona Mourshed. 2007. *How the World's Best-Performing School Systems Come Out on Top*. McKinsey and Company.
- 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.
- Barnes, Douglas and Frankie Todd. 1981. 'Talk in Small Learning Groups: Analysis of Strategies'. In *Uttering, Muttering: Collecting, Using and Reporting Talk for Social and Educational Research*, edited by Clem Adelman. London: Grant McIntyre.
- Baron, Robert S. and Norbert L. Kerr. 2003. *Group Process, Group Decision, Group Action*. 2nd ed. Maidenhead: Open University Press.
- Bateman, Helen Vrailas. 2002. 'Students' Sense of Community: Implications for Class Size'. In *Taking Small Classes One Step Further*, edited by Jeremy D. Finn and Margaret C. Wang, 63–75. Greenwich, CT: Information Age Publishing.
- Bennett, Neville. 1996. 'Class Size in Primary Schools: Perceptions of Headteachers, Chairs of Governors, Teachers and Parents', *British Educational Research Journal* 22 (1): 33–55. <https://doi.org/10.1080/0141192960220103>.
- Berliner, David C. and Gene V. Glass, eds. 2014. *50 Myths and Lies That Threaten America's Public Schools: The Real Crisis in Education*. New York: Teachers College Press.
- Berndt, Thomas J. and Keunho Keefe. 1995. 'Friends' Influence on Adolescents' Adjustment to School', *Child Development* 66 (5): 1312–29. <https://doi.org/10.1111/j.1467-8624.1995.tb00937.x>.
- Betts, Julian R. and Jamie L. Shkolnik. 1999. 'The Behavioral Effects of Variations in Class Size: The Case of Math Teachers', *Educational Evaluation and Policy Analysis* 21 (2): 193–213. <https://doi.org/10.3102/01623737021002193>.
- Biddle, Bruce J. and David C. Berliner. 2002a. 'Small Class Size and Its Effects', *Educational Leadership* 59 (5): 12–23.
- Biddle, Bruce J. and David C. Berliner. 2002b. *What Research Says about Small Classes and Their Effects*. Tempe: Arizona State University.
- Black, Paul. 2007. 'Full Marks for Feedback', *Make the Grade: Journal of the Institute of Educational Assessors* 2 (1): 18–21.
- Black, Paul and Dylan Wiliam. 2009. 'Developing the Theory of Formative Assessment', *Educational Assessment, Evaluation and Accountability* 21: 5–31. <https://doi.org/10.1007/s11092-008-9068-5>.
- 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 and Ed Baines. 2010. 'Peer Relations in School'. In *International Handbook of Psychology in Education*, edited by Karen Littleton, Clare Wood and Judith Kleine Staarman, 227–74. Bingley: Emerald Group Publishing.
- Blatchford, Peter, Ed Baines, Peter Kutnick and Clare Martin. 2001. 'Classroom Contexts: Connections between Class Size and within Class Grouping', *British Journal of Educational Psychology* 71 (2): 283–302. <https://doi.org/10.1348/000709901158523>.
- 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. 2011a. '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, Clare Martin, Anthony Russell and Rob Webster. 2011b. 'The Impact of Support Staff on Pupils' "Positive Approaches to Learning" and Their Academic Progress', *British Educational Research Journal* 37 (3): 443–64. <https://doi.org/10.1080/01411921003734645>.
- 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, Paul Bassett, Harvey Goldstein and Clare Martin. 2003a. 'Are Class Size Differences Related to Pupils' Educational Progress and Classroom Processes? Findings from the Institute of Education Class Size Study of Children Aged 5–7 Years', *British Educational Research Journal* 29 (5): 709–30. <https://doi.org/10.1080/0141192032000133668>.
- Blatchford, Peter, Paul Bassett, Harvey Goldstein, Clare Martin, Gemma Catchpole, Suzanne Edmonds and Viv Moriarty. 2003b. *The Class Size Debate: Is Small Better?* Maidenhead: Open University Press.
- Blatchford, Peter, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, eds. 2016b. *Class Size: Eastern and Western Perspectives*. London: Routledge.
- Blatchford, Peter, Suzanne Edmonds and Clare Martin. 2003c. 'Class Size, Pupil Attentiveness and Peer Relations', *British Journal of Educational Psychology* 73 (1): 15–36. <https://doi.org/10.1348/000709903762869897>.
- Blatchford, Peter, Harvey Goldstein, Clare Martin and William Browne. 2002a. 'A Study of Class Size Effects in English School Reception Year Classes', *British Educational Research Journal* 28 (2): 169–85. <https://doi.org/10.1080/01411920120122130>.
- Blatchford, Peter, Harvey Goldstein and Peter Mortimore. 1998. 'Research on Class Size Effects: A Critique of Methods and a Way Forward', *International Journal of Educational Research* 29 (8): 691–710. [https://doi.org/10.1016/S0883-0355\(98\)00058-5](https://doi.org/10.1016/S0883-0355(98)00058-5).
- Blatchford, Peter, Peter Kutnick, Ed Baines and Maurice Galton. 2003d. 'Toward a Social Pedagogy of Classroom Group Work', *International Journal of Educational Research* 39 (1/2): 153–72. [https://doi.org/10.1016/S0883-0355\(03\)00078-8](https://doi.org/10.1016/S0883-0355(03)00078-8).
- Blatchford, Peter, Viv Moriarty, Suzanne Edmonds and Clare Martin. 2002b. 'Relationships between Class Size and Teaching: A Multimethod Analysis of English Infant Schools', *American Educational Research Journal* 39 (1): 101–32. <https://doi.org/10.3102/00028312039001101>.
- Blatchford, Peter and Peter Mortimore. 1994. 'The Issue of Class Size for Young Children in Schools: What Can We Learn from Research?', *Oxford Review of Education* 20 (4): 411–28. <https://doi.org/10.1080/0305498940200402>.
- Blatchford, Peter, Anthony D. Pellegrini and Ed Baines. 2016a. *The Child at School: Interactions with Peers and Teachers*. 2nd ed. Hove: Routledge.
- Blatchford, Peter and Anthony Russell, eds. 2019. Special edition on 'New Ways of Thinking about Research on Class Size: An International Perspective'. *International Journal of Educational Research*, 96.
- Blatchford, Peter, Anthony Russell, Paul Bassett, Penelope Brown and Clare Martin. 2007. 'The Effect of Class Size on the Teaching of Pupils Aged 7–11 Years', *School Effectiveness and School Improvement* 18 (2): 147–72. <https://doi.org/10.1080/09243450601058675>.
- Blatchford, Peter, Anthony Russell and Rob Webster. 2012. *Reassessing the Impact of Teaching Assistants: How Research Challenges Practice and Policy*. London: Routledge.
- 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>.
- Bloom, Adi. 2017. 'Half a Million Primary Pupils Are Taught in "Supersized" Classes', *Times Educational Supplement*, 27 July. Accessed 24 May 2020. www.tes.com/news/half-million-primary-pupils-are-taught-supersized-classes.

- Bloom, Benjamin S., Max D. Engelhart, Edward J. Furst, Walker H. Hill and David R. Krathwohl. 1956. *Taxonomy of Educational Objectives: The Classification of Educational Goals: Handbook 1 – Cognitive Domain*. London: Longmans.
- Borland, Melvin V., Roy M. Howsen and Michelle W. Trawick. 2005. 'An Investigation of the Effect of Class Size on Student Academic Achievement', *Education Economics* 13 (1): 73–83. <https://doi.org/10.1080/0964529042000325216>.
- Bosanquet, Paula, Julie Radford and Rob Webster. 2016. *The Teaching Assistant's Guide to Effective Interaction: How to Maximise Your Practice*. London: Routledge.
- Bourke, Sid. 1986. 'How Smaller is Better: Some Relationships between Class Size, Teaching Practices, and Student Achievement', *American Educational Research Journal* 23 (4): 558–71. <https://doi.org/10.3102/00028312023004558>.
- Bray, Mark. 1999. *The Shadow Education System: Private Tutoring and Its Implications for Planners* (Fundamentals of Educational Planning 61). Paris: UNESCO International Institute for Educational Planning.
- Bressoux, Pascal. 2016. 'Research on Class Size in France'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 80–91. London: Routledge.
- Bressoux, Pascal, Laurent Lima and Christian Monseur. 2019. 'Reducing the Number of Pupils in French First-Grade Classes: Is There Evidence of Contemporaneous and Carryover Effects?', *International Journal of Educational Research* 96: 136–45. <https://doi.org/10.1016/j.ijer.2018.10.006>.
- Bronfenbrenner, Urie. 1979. *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard University Press.
- Brophy, Jere. 2000. 'How Might Teachers Make Smaller Classes Better Classes?'. In *How Small Classes Help Teachers Do Their Best*, edited by Margaret C. Wang and Jeremy D. Finn, 35–61. Philadelphia: Temple University Center for Research in Human Development and Education.
- Brophy, Jere and Thomas L. Good. 1986. 'Teacher Behavior and Student Achievement'. In *Handbook of Research on Teaching*, edited by Merlin C. Wittrock, 328–75. 3rd ed. New York: Macmillan.
- Brown, Rupert. 2000. *Group Processes: Dynamics within and between Groups*. 2nd ed. Oxford: Blackwell.
- Bukowski, William M., Andrew F. Newcomb and Willard W. Hartup. 1996. *The Company They Keep: Friendship in Childhood and Adolescence*. Cambridge: Cambridge University Press.
- Burstall, Clare. 1979. 'Time to Mend the Nets: A Commentary on the Outcomes of Class-Size Research', *Trends in Education* 3: 27–33.
- CACE (1967) *Children and Their Primary Schools* ('the Plowden Report'). Vol. 1: *Central Advisory Council for Education (England)*. London: HMSO.
- Cahen, Leonard S., Nikola Filby, Gail McCutcheon and Diane W. Kyle. 1983. *Class Size and Instruction*. New York: Longman.
- Cazden, Courtney B. 2001. *Classroom Discourse: The Language of Teaching and Learning*. 2nd ed. Portsmouth, NH: Heinemann.
- Conservapedia. 2017. 'Essay: Advantages of Large Classes'. Accessed 8 April 2020. www.conservapedia.com/Essay:Advantages_of_Large_Classes.
- Cooper, Harris M. 1989. 'Does Reducing Student-to-Instructor Ratios Affect Achievement?', *Educational Psychologist* 24 (1): 79–98. https://doi.org/10.1207/s15326985ep2401_3.
- Creemers, Bert P.M. 1994. *The Effective Classroom*. London: Cassell.
- Croll, Paul. 1986. *Systematic Classroom Observation*. London: Falmer.
- Crooks, Terence J. 1988. 'The Impact of Classroom Evaluation Practices on Students', *Review of Educational Research* 58 (4): 438–81. <https://doi.org/10.3102/00346543058004438>.
- Darling-Hammond, Linda, Lisa Flook, Channa Cook-Harvey, Brigid Barron and David Osher. 2020. 'Implications for Educational Practice of the Science of Learning and Development', *Applied Developmental Science* 24 (2): 97–140. <https://doi.org/10.1080/10888691.2018.1537791>.
- Davie, Ronald, Neville Butler and Harvey Goldstein. 1972. *From Birth to Seven*. London: Longman.
- Day, C., H. Tolley, M. Hadfield, E. Parkin and G.R. Watling. 1996. *Class Size Research and the Quality of Education: A Critical Survey of the Literature Related to Class Size and the Quality of Teaching and Learning*. Haywards Heath: National Association of Head Teachers.
- DCSF (Department for Children, Schools and Families). 2009. *School Workforce in England (SFR09/2009)*. London: Department for Children, Schools and Families.

- Dearing, Ron. 1994. *The National Curriculum and Its Assessment: Final Report*. London: School Curriculum and Assessment Authority.
- Delamont, Sara and David Hamilton. 1986. 'Revisiting Classroom Research: A Continuing Cautionary Tale'. In *Controversies in Classroom Research*, edited by Martyn Hammersley, 25–43. Milton Keynes: Open University Press.
- Dewhurst, John. 1993. 'Class Size and Pupil Achievement in Primary Schools: A Review of the Research Evidence', *Education 3–13: International Journal of Primary, Elementary and Early Years Education* 21 (1): 15–18. <https://doi.org/10.1080/03004279385200051>.
- DfE (Department for Education). 2011. *Class Size and Education in England Evidence Report* (Research Report DFE-RR169). London: Department for Education.
- DfE (Department for Education). 2019. 'School Workforce in England: November 2018'. Accessed 23 April 2020. www.gov.uk/government/statistics/school-workforce-in-england-november-2018.
- Dolton, Peter, Oscar Marcenaro-Gutiérrez and Adam Still. 2014. *The Efficiency Index: Which Education Systems Deliver the Best Value for Money?* London: GEMS Education Solutions.
- Dong, Beifei, Kwok Chan Lai and Kam Wing Chan. 2016. 'Teachers' Professional Development for Small Class Teaching in Shanghai'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 208–19. London: Routledge.
- Doyle, Walter. 1986. 'Classroom Organization and Management'. In *Handbook of Research on Teaching*, edited by Merlin C. Wittrock, 392–431. 3rd ed. New York: Macmillan.
- Duflo, Esther, Pascaline Dupas and Michael Kremer. 2015. 'School Governance, Teacher Incentives, and Pupil-Teacher Ratios: Experimental Evidence from Kenyan Primary Schools', *Journal of Public Economics* 123: 92–110. <https://doi.org/10.1016/j.jpubeco.2014.11.008>.
- Dunkin, Michael J. and Bruce J. Biddle. 1974. *The Study of Teaching*. New York: Holt, Reinhart and Winston.
- Dunn, Judy. 2004. *Children's Friendships: The Beginnings of Intimacy*. Malden, MA: Blackwell.
- The Economist*. 2016. 'Big Classes, Small Problem?', *The Economist*, 23 January. Accessed 24 May 2020. www.economist.com/britain/2016/01/23/big-classes-small-problem.
- Edwards, A.D. and D.P.G. Westgate. 1994. *Investigating Classroom Talk*. 2nd ed. London: Falmer Press.
- 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>.
- Elliott, Victoria, Jo-Anne Baird, Therese N. Hopfenbeck, Jenni Ingram, Ian Thompson, Natalie Usher, Mae Zantout, James Richardson and Robbie Coleman. 2016. *A Marked Improvement? A Review of the Evidence on Written Marking*. London: Education Endowment Foundation and University of Oxford.
- Englehart, Joshua M. 2006. 'Teacher Perceptions of Student Behavior as a Function of Class Size', *Social Psychology of Education* 9: 245–72. <https://doi.org/10.1007/s11218-006-0007-3>.
- Evertson, Carolyn M. and Catherine H. Randolph. 1989. 'Teaching Practices and Class Size: A New Look at an Old Issue', *Peabody Journal of Education* 67 (1): 85–105. <https://doi.org/10.1080/01619569209538671>.
- Evertson, Carolyn M. and Carol S. Weinstein, eds. 2011. *Handbook of Classroom Management: Research, Practice, and Contemporary Issues*. New York: Routledge.
- Feinstein, Leon, David Budge, John Vorhaus and Kathryn Duckworth, eds. 2008. *The Social and Personal Benefits of Learning: A Summary of Key Research Findings*. London: Centre for Research on the Wider Benefits of Learning.
- 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>.
- Finn, Jeremy D. 2019. 'Academic and Non-Cognitive Effects of Small Classes', *International Journal of Educational Research* 96: 125–35. <https://doi.org/10.1016/j.ijer.2019.05.006>.
- 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>.
- Finn, Jeremy D., Gina M. Pannozzo and Charles M. Achilles. 2003. 'The "Why's" of Class Size: Student Behavior in Small Classes', *Review of Educational Research* 73 (3): 321–68. <https://doi.org/10.3102/00346543073003321>.

- Finn, Jeremy D. and Michele E. Shanahan. 2016. 'Does Class Size (Still) Matter?'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 121–45. London: Routledge.
- Finn, Jeremy D. and Margaret C. Wang, eds. 2002. *Taking Small Classes One Step Further*. Greenwich, CT: Information Age Publishing.
- Flanders, Ned A. 1970. *Analyzing Teaching Behavior*. Reading, MA: Addison-Wesley.
- Florian, Lani, ed. 2007. *The SAGE Handbook of Special Education*. London: SAGE Publications.
- Fredriksson, Peter, Björn Öckert and Hessel Oosterbeek. 2013. 'Long-Term Effects of Class Size', *Quarterly Journal of Economics* 128 (1): 249–85. <https://doi.org/10.1093/qje/qjs048>.
- Full Fact. 2017. 'Primary Class Sizes in England and Wales', *Full Fact*, 11 May. Accessed 31 March 2020. <https://fullfact.org/education/primary-class-sizes-england-and-wales/>.
- Gage, N.L. 1985. *Hard Gains in the Soft Sciences: The Case of Pedagogy*. Bloomington, IN: Phi Delta Kappa.
- Galton, Maurice. 1998. 'Class Size: A Critical Comment on the Research', *International Journal of Educational Research* 29: 809–18.
- Galton, Maurice. 2008. 'Does the Tennessee Star Shine All Over the World? Cultural Diversity and Class Size Reductions'. Paper presented at the American Educational Research Association (AERA) Annual Meeting, New York, 24–28 March 2008.
- Galton, Maurice, Linda Hargreaves, Chris Comber, Debbie Wall and Tony Pell. 1999. 'Changes in Patterns of Teacher Interaction in Primary Classrooms: 1976–96', *British Educational Research Journal* 25 (1): 23–37. <https://doi.org/10.1080/0141192990250103>.
- Galton, Maurice, Kwok Chan Lai and Kam Wing Chan. 2015. *Learning to Teach Small Classes: Lessons from East Asia*. London: Routledge.
- Galton, Maurice, Kwok Chan Lai and Kam Wing Chan. 2019. 'Implementing Small Class Teaching in East Asia: Problems and Possibilities', *International Journal of Educational Research* 96: 164–72. <https://doi.org/10.1016/j.ijer.2018.10.004>.
- Galton, Maurice and Tony Pell. 2010. *Study on Small Class Teaching in Primary Schools in Hong Kong: Final Report*. Hong Kong: Hong Kong Education Bureau and Cambridge: University of Cambridge.
- Galton, Maurice, Brian Simon and Paul Croll. 1980. *Inside the Primary Classroom*. London: Routledge and Kegan Paul.
- Gersten, Russell and Lana Edwards Santoro. 2007. 'Advances in Research on Teaching Students Who Experience Difficulties in Learning: Grappling with the Issue of Access to the General Curriculum'. In *The SAGE Handbook of Special Education*, edited by Lani Florian, 187–206. London: SAGE Publications.
- Guerra, Jennifer and Mark Brush. 2015. 'Teachers Tell Us Class Sizes Are Getting Bigger in Michigan', *State of Opportunity*, 3 December. Accessed 31 March 2020. <https://stateofopportunity.michiganradio.org/post/teachers-tell-us-class-sizes-are-getting-bigger-michigan>.
- Giangreco, Michael F. and Mary Beth Doyle. 2007. 'Teacher Assistants in Inclusive Schools'. In *The SAGE Handbook of Special Education*, edited by Lani Florian, 429–39. London: SAGE Publications.
- Giangreco, Michael F., Susan Yuan, Barbara McKenzie, Patricia Cameron and Janice Fialka. 2005. "'Be Careful What You Wish For...": Five Reasons to Be Concerned about the Assignment of Individual Paraprofessionals', *Teaching Exceptional Children* 37 (5): 28–34. <https://doi.org/10.1177/004005990503700504>.
- Gifford-Smith, Mary E. and Celia A. Brownell. 2003. 'Childhood Peer Relationships: Social Acceptance, Friendships, and Peer Networks', *Journal of School Psychology* 41 (4): 235–84. [https://doi.org/10.1016/S0022-4405\(03\)00048-7](https://doi.org/10.1016/S0022-4405(03)00048-7).
- Glass, Gene V., Leonard S. Cahen, Mary Lee Smith and Nikola N. Filby. 1982. *School Class Size: Research and Policy*. Beverly 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.
- Goldstein, Harvey and Peter Blatchford. 1998. 'Class Size and Educational Achievement: A Review of Methodology with Particular Reference to Study Design', *British Educational Research Journal* 24 (3): 255–68. <https://doi.org/10.1080/0141192980240302>.

- Griffin, Patrick, Esther Care and Barry McGaw. 2012. 'The Changing Role of Education and Schools'. In *Assessment and Teaching of 21st Century Skills*, edited by Patrick Griffin, Barry McGaw and Esther Care, 1–15. Dordrecht: Springer.
- Grissmer, David. 1999. 'Class Size Effects: Assessing the Evidence, Its Policy Implications, and Future Research Agenda', *Educational Evaluation and Policy Analysis* 21 (2): 231–48. <https://doi.org/10.3102/01623737021002231>.
- Hamre, Bridget K. and Robert C. Pianta. 2010. 'Classroom Environments and Developmental Processes: Conceptualization and Measurement'. In *Handbook of Research on Schools, Schooling, and Human Development*, edited by Judith L. Meece and Jacquelynne S. Eccles, 25–41. New York: Routledge.
- 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>.
- Harfitt, Gary. 2015. *Class Size Reduction: Key Insights from Secondary School Classrooms*. Singapore: Springer.
- Harfitt, Gary, Dennis Fung and Tim Liang. 2019. 'Promoting Good Practice in Small Classes: Lessons Learnt from Small Class Teaching Professional Development Programmes in Hong Kong', *International Journal of Educational Research* 96: 173–82. <https://doi.org/10.1016/j.ijer.2018.10.005>.
- Hargreaves, Linda and Maurice Galton. 2002. *Transfer from the Primary Classroom: 20 Years On*. London: RoutledgeFalmer.
- Harris, Judith Rich. 1995. 'Where is the Child's Environment? A Group Socialization Theory of Development', *Psychological Review* 102 (3): 458–89. <https://doi.org/10.1037/0033-295X.102.3.458>.
- Harris, Karen R., Steve Graham and Tim Urdan, eds. 2012. *APA Educational Psychology Handbook*. Washington, DC: American Psychological Association.
- Hartup, Willard W. 1992. 'Friendships and Their Developmental Significance'. In *Childhood Social Development: Contemporary Perspectives*, edited by Harry McGurk, 175–205. Hove: Lawrence Erlbaum Associates.
- Hattie, John. 2005. 'The Paradox of Reducing Class Size and Improving Learning Outcomes', *International Journal of Educational Research* 43 (6): 387–425. <https://doi.org/10.1016/j.ijer.2006.07.002>.
- Hattie, John. 2009. *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*. London: Routledge.
- Hattie, John. 2016. 'The Right Question in the Debates about Class Size: Why is the (Positive) Effect so Small?'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 105–118. London: Routledge.
- Hattie, John, Deb Masters and Kate Birch. 2016. *Visible Learning into Action: International Case Studies of Impact*. London: Routledge.
- Hazell, Will. 2018. 'Call to Increase Class Sizes to Give Teachers More Time for CPD', *Times Educational Supplement*, 26 April. Accessed 6 May 2020. www.tes.com/news/call-increase-class-sizes-give-teachers-more-time-cpd.
- Hefft, Harry. 2001. *Ecological Psychology in Context: James Gibson, Roger Barker, and the Legacy of William James's Radical Empiricism*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Hefft, Harry. 2018. 'Places: Widening the Scope of an Ecological Approach to Perception-Action with an Emphasis on Child Development', *Ecological Psychology* 30 (1): 99–123. <https://doi.org/10.1080/10407413.2018.1410045>.
- Higgins, Steve, Maria Katsipatakis, Dimitra Kokotsaki, Robbie Coleman, Lee Elliot Major and Robert Coe. 2013. *The Sutton Trust-Education Endowment Foundation Teaching and Learning Toolkit*. London: Education Endowment Foundation. <http://dro.dur.ac.uk/11453/>.
- Higgins, Steve and Adrian Simpson. 2011. 'Book Review – *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*, by John A.C. Hattie', *British Journal of Educational Studies* 59 (2): 197–201. <https://doi.org/10.1080/00071005.2011.584660>.
- HMC (Headmasters' and Headmistresses' Conference). n.d. 'Smaller Class Sizes'. Accessed 10 June 2020. <https://www.hmc.org.uk/about-hmc/why-choose-a-hmc-school/smaller-class-sizes/>

- Hosking, Wes. 2014. 'Guidelines on Class Sizes Could Be Removed after Report Shows They Might Not Impact Academic Performance', *Herald Sun*, 31 August. Accessed 9 April 2020. www.heraldsun.com.au/news/victoria/guidelines-on-class-sizes-could-be-removed-after-report-shows-they-might-not-impact-academic-performance/news-story/603aa11a2df5cc3123ffd0528b5aa167.
- Howe, Christine. 2010. *Peer Groups and Children's Development*. Chichester: Wiley-Blackwell.
- Howe, Christine and Manzoorul Abedin. 2013. 'Classroom Dialogue: A Systematic Review across Four Decades of Research', *Cambridge Journal of Education* 43 (3): 325–56. <https://doi.org/10.1080/0305764X.2013.786024>.
- Illeris, Knud. 2007. *How We Learn: Learning and Non-Learning in School and Beyond*. London: Routledge.
- Independent Teacher Workload Review Group. 2016. *Eliminating Unnecessary Workload around Marking: Report of the Independent Teacher Workload Review Group*. London: Department for Education. Accessed 26 May 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/511256/Eliminating-unnecessary-workload-around-marking.pdf.
- Jackson, Philip W. 1968. *Life in Classrooms*. New York: Holt, Rinehart and Winston.
- Jensen, Ben. 2012. *Catching Up: Learning from the Best School Systems in East Asia: Summary Report*. Melbourne: Grattan Institute.
- Johnson, David W. and Roger T. Johnson. 1987. *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*. 2nd ed. Englewood Cliffs, NJ: Prentice Hall.
- Johnston, John M. 1989. 'Teacher Perceptions of Changes in Teaching When They Have a Small Class or an Aide', *Peabody Journal of Education* 67 (1): 106–22. <https://doi.org/10.1080/01619569209538672>.
- Ko, James, Pamela Sammons and Linda Bakkum. 2013. *Effective Teaching: A Review of Research and Evidence*. Reading: CfBT Education Trust.
- Konstantopoulos, Spyros. 2008. 'Do Small Classes Reduce the Achievement Gap between Low and High Achievers? Evidence from Project STAR', *Elementary School Journal* 108 (4): 275–91. <https://doi.org/10.1086/528972>.
- Konstantopoulos, Spyros and Vicki Chung. 2009. 'What Are the Long-Term Effects of Small Classes on the Achievement Gap? Evidence from the Lasting Benefits Study', *American Journal of Education* 116 (1): 125–54. <https://doi.org/10.1086/605103>.
- Kounin, Jacob S. 1970. *Discipline and Group Management in Classrooms*. New York: Holt, Rinehart and Winston.
- Kounin, Jacob S. and Paul V. Gump. 1974. 'Signal Systems of Lesson Settings and the Task-Related Behavior of Preschool Children', *Journal of Educational Psychology* 66 (4): 554–62. <https://doi.org/10.1037/h0036748>.
- 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.
- Krueger, Alan B. and Diane M. Whitmore. 2001. 'The Effect of Attending a Small Class in the Early Grades on College-Test Taking and Middle School Test Results: Evidence from Project STAR', *The Economic Journal* 111 (468): 1–28. <https://doi.org/10.1111/1468-0297.00586>.
- Kutnick, Peter. 1988. *Relationships in the Primary School Classroom*. London: Paul Chapman.
- Kutnick, Peter and Peter Blatchford. 2014. *Effective Group Work in Primary School Classrooms: The SPRinG Approach*. Dordrecht: Springer.
- Kyriacou, Chris. 2009. *Effective Teaching in Schools: Theory and Practice*. 3rd ed. Cheltenham: Nelson Thornes.
- Ladd, Gary W. 2005. *Children's Peer Relations and Social Competence: A Century of Progress*. New Haven: Yale University Press.
- Ladd, Gary W., Becky J. Kochenderfer and Cynthia C. Coleman. 1996. 'Friendship Quality as a Predictor of Young Children's Early School Adjustment', *Child Development* 67 (3): 1103–18. <https://doi.org/10.2307/1131882>.
- Lai, Kwok Chan, Peter Blatchford and Beifei Dong. 2016. 'Eastern and Western Perspectives: Educational and Policy Contexts and How They Have Shaped Approaches to Class Size'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 21–39. London: Routledge.
- Lan, Xuezhao, Claire Cameron Ponzit, Kevin F. Miller, Su Li, Kai Cortina, Michelle Perry and Ge Fang. 2009. 'Keeping Their Attention: Classroom Practices Associated with Behavioral Engagement in First Grade Mathematics Classes in China and the United

- States', *Early Childhood Research Quarterly* 24 (2): 198–211. <https://doi.org/10.1016/j.ecresq.2009.03.002>.
- Latané, Bibb, Kipling Williams and Stephen Harkins. 1979. 'Many Hands Make Light the Work: The Causes and Consequences of Social Loafing', *Journal of Personality and Social Psychology* 37 (6): 822–32.
- Lee, John Chi-Kin. 2016. 'East Asian Contexts of Small Class Teaching: Policies and Practices'. In *Class Size: Eastern and Western Perspectives*, edited by Peter Blatchford, Kam Wing Chan, Maurice Galton, Kwok Chan Lai and John Chi-Kin Lee, 40–56. London: Routledge.
- Levitt, Heidi M., Michael Bamberg, John W. Creswell, David M. Frost, Ruthellen Josselson and Carola Suárez-Orozco. 2018. 'Journal Article Reporting Standards for Qualitative Primary, Qualitative Meta-Analytic, and Mixed Methods Research in Psychology: The APA Publications and Communications Board Task Force Report', *American Psychologist* 73 (1): 26–46.
- Levy Epstein, Joyce. 1983. 'The Influence of Friends on Achievement and Affective Outcomes'. In *Friends in School: Patterns of Selection and Influence in Secondary Schools*, edited by Joyce Levy Epstein and Nancy Karweit, 177–200. New York: Academic Press.
- Little, A., C. Mabey and J. Russell. 1972. 'Class Size, Pupil Characteristics and Reading Attainment'. In *Literacy at All Levels: Proceedings of the Eighth Annual Study Conference of the United Kingdom Reading Association, Manchester 1971*, edited by Vera Southgate, 205–12. London: Ward Lock.
- Lou, Yiping, Philip C. Abrami, John C. Spence, Catherine Poulsen, Bette Chambers and Sylvia d'Apollonia. 1996. 'Within-Class Grouping: A Meta-Analysis', *Review of Educational Research* 66 (4): 423–58. <https://doi.org/10.3102/00346543066004423>.
- Loyens, Sofie M.M., Paul A. Kirschner and Fred Paas. 2012. 'Problem-Based Learning'. In *APA Educational Psychology Handbook, Volume 3: Application to Learning and Teaching*, edited by Karen R. Harris, Steve Graham, Tim Urdan, Adriana G. Bus, Sonya Major and H. Lee Swanson, 403–25. Washington, DC: American Psychological Association.
- Lubbers, Miranda J., Margaretha P.C. Van Der Werf, Tom A.B. Snijders, Bert P.M. Creemers and Hans Kuyper. 2006. 'The Impact of Peer Relations on Academic Progress in Junior High', *Journal of School Psychology* 44 (6): 491–512. <https://doi.org/10.1016/j.jsp.2006.07.005>.
- MacArthur, Charles A. 2012. 'Strategies Instruction'. In *APA Educational Psychology Handbook, Volume 3: Application to Learning and Teaching*, edited by Karen R. Harris, Steve Graham, Tim Urdan, Adriana G. Bus, Sonya Major and H. Lee Swanson, 379–401. Washington, DC: American Psychological Association.
- Maxwell, William. 1990. 'The Nature of Friendship in the Primary School'. In *The Social Psychology of the Primary School*, edited by Colin Rogers and Peter Kutnick, 169–89. London: Routledge.
- McGrath, Joseph E. and T. William Altmatt. 2001. 'Observation and Analysis of Group Interaction over Time: Some Methodological and Strategic Choices'. In *Blackwell Handbook of Social Psychology: Group Processes*, edited by Michael A. Hogg and Scott Tindale, 525–56. Malden, MA: Blackwell.
- McIntyre, D. and G. Macleod. 1986. 'The Characteristics and Uses of Systematic Observation'. In *Controversies in Classroom Research*, edited by Martyn Hammersley. Milton Keynes: Open University Press.
- Mehan, Hugh. 1979. *Learning Lessons: Social Organization in the Classroom*. Cambridge, MA: Harvard University Press.
- Melander, Ingrid. 2018. "No Kid Left Behind": Macron Tries to Fix France's Education System', *Reuters World News*, 5 July. Accessed 25 May 2020. <https://uk.reuters.com/article/uk-france-reforms-education/no-kid-left-behind-macron-tries-to-fix-frances-education-system-idUKKBN1JVOM6>.
- Mercer, Neil. 2000. *Words and Minds: How We Use Language to Think Together*. London: Routledge.
- Mercer, Neil and Christine Howe. 2012. 'Explaining the Dialogic Processes of Teaching and Learning: The Value and Potential of Sociocultural Theory', *Learning, Culture and Social Interaction* 1 (1): 12–21. <https://doi.org/10.1016/j.lcsi.2012.03.001>.
- Mitchell, Douglas E., Sara Ann Beach and Gary Badarak. 1989. 'Modeling the Relationship between Achievement and Class Size: A Re-Analysis of the Tennessee Project STAR Data', *Peabody Journal of Education* 67 (1): 34–74. <https://doi.org/10.1080/01619569209538669>.
- Molnar, Alex, Philip Smith, John Zahorik, Amanda Palmer, Anke Halbach and Karen Ehrle. 1999. 'Evaluating the SAGE Program: A Pilot Program in Targeted Pupil-Teacher Reduction in Wisconsin', *Educational Evaluation and Policy Analysis* 21 (2): 165–77. <https://doi.org/10.3102/01623737021002165>.

- Moos, Rudolf H. 1979. *Evaluating Educational Environments: Procedures, Measures, Findings and Policy Implications*. San Francisco: Jossey-Bass.
- Morris, Joyce M. 1959. *Reading in the Primary School: An Investigation into Standards of Reading and their Association with Primary School Characteristics*. London: Newnes.
- Muijs, Daniel and David Reynolds. 2011. *Effective Teaching: Evidence and Practice*. 3rd ed. London: SAGE Publications.
- Murray, Jacqui. n.d. 'Bigger Can Be Better: Reasons Class Size Does Not Matter', *TeachHUB*. Accessed 5 May 2020. www.teachhub.com/bigger-can-be-better-reasons-class-size-does-not-matter.
- Myhill, Debra, Susan Jones and Rosemary Hopper. 2006. *Talking, Listening, Learning: Effective Talk in the Primary Classroom*. Maidenhead: Open University Press.
- National Center on Education in the Inner Cities (CEIC). 2000. *National Center on Education in the Inner Cities (CEIC) Review* 9 (2).
- Neale, Ian. 2018. 'Teachers: Stressed and Undervalued – but Satisfied with Their Job', *YouGov*, 29 November. Accessed 5 May 2020. <https://yougov.co.uk/topics/economy/articles-reports/2018/11/29/teachers-stressed-and-undervalued-satisfied-their->
- Newcomb, Andrew F. and Catherine L. Bagwell. 1995. 'Children's Friendship Relations: A Meta-Analytic Review', *Psychological Bulletin* 117 (2): 306–47. <https://doi.org/10.1037/0033-2909.117.2.306>.
- Nuthall, Graham. 2007. *The Hidden Lives of Learners*. Wellington: New Zealand Council for Educational Research.
- Nye, B.A., C.M. Achilles, J.B. Zaharias, B.D. Fulton and M.P. Wallenhorst. 1993. 'Tennessee's Bold Experiment: Using Research to Inform Policy and Practice', *Tennessee Education* 22 (3): 10–17.
- O'Brien, Jarlath. 2016. *Don't Send Him in Tomorrow: Shining a Light on the Marginalised, Disenfranchised and Forgotten Children of Today's Schools*. Bancyfelin: Independent Thinking Press.
- O'Donnell, Angela M. and Alison King, eds. 1999. *Cognitive Perspectives on Peer Learning*. Mahwah, NJ: Lawrence Erlbaum Associates.
- OECD (Organisation for Economic Co-operation and Development). 2012. *Does Money Buy Strong Performance in PISA?* (PISA in Focus 13). Paris: Organisation for Economic Co-operation and Development.
- OECD (Organisation for Economic Co-operation and Development). 2013. *Teaching and Learning International Survey (TALIS)*. Paris: Organisation for Economic Co-operation and Development.
- OECD (Organisation for Economic Co-operation and Development). 2019. 'Student–Teacher Ratio and Average Class Size'. *OECD.Stat*. Accessed 25 May 2020. <https://stats.oecd.org/index.aspx?queryid=79502>
- Parker, Jeffrey G. and Steven R. Asher. 1987. 'Peer Relations and Later Personal Adjustment: Are Low-Accepted Children at Risk?', *Psychological Bulletin* 102 (3): 357–89. <https://doi.org/10.1037/0033-2909.102.3.357>.
- Pate Bain, Helen and C.M. Achilles. 1986. 'Interesting Developments on Class Size', *Phi Delta Kappan* 67 (9): 662–65.
- Pate-Bain, Helen, C.M. Achilles, Jayne Boyd-Zaharias and Bernard McKenna. 1992. 'Class Size Does Make a Difference', *Phi Delta Kappan* 74 (3): 253–56.
- Pells, Rachael. 2017. 'More than Half of Schools Forced to Increase Class Sizes as a Result of Underfunding', *The Independent*, 1 April. Accessed 20 April 2020. www.independent.co.uk/news/education/education-news/uk-school-increase-class-sizes-due-to-underfunding-a7658941.html.
- Pianta, Robert C., Karen M. La Paro, Chris Payne, Martha J. Cox and Robert Bradley. 2002. 'The Relation of Kindergarten Classroom Environment to Teacher, Family, and School Characteristics and Child Outcomes', *Elementary School Journal* 102 (3): 225–38. <https://doi.org/10.1086/499701>.
- Plomin, Robert. 2018. *Blueprint: How DNA Makes Us Who We Are*. London: Allen Lane.
- Pollard, Andrew, Patricia Broadfoot, Paul Croll, Marilyn Osborn and Dorothy Abbott. 1994. *Changing English Primary Schools? The Impact of the Education Reform Act at Key Stage One*. London: Cassell.
- Pollard, Andrew and Sarah Tann. 1993. *Reflective Teaching in the Primary School: A Handbook for the Classroom*. 2nd ed. London: Cassell.

- Radford, Julie, Peter Blatchford and Rob Webster. 2011. 'Opening Up and Closing Down: How Teachers and TAs Manage Turn-Taking, Topic and Repair in Mathematics Lessons', *Learning and Instruction* 21 (5): 625–35. <https://doi.org/10.1016/j.learninstruc.2011.01.004>.
- Radford, Julie, Paula Bosanquet, Rob Webster, Peter Blatchford and Christine Rubie-Davies. 2014. 'Fostering Learner Independence through Heuristic Scaffolding: A Valuable Role for Teaching Assistants', *International Journal of Educational Research* 63: 116–26. <https://doi.org/10.1016/j.ijer.2013.02.010>.
- Resnick, Lauren B. 2000. 'Learning Organisations for Sustainable Education Reform'. Keynote address to ESRC Teaching and Learning Research Programme, First Annual Conference, University of Leicester, November.
- Rhodes, David. 2017. 'Number of Children Taught in Large Classes Trebles', *BBC News*, 10 January. Accessed 23 April 2020. www.bbc.co.uk/news/uk-england-38506305.
- Richardson, Rhian, Paul Goodman, Sarah Flight and Gill Richards. 2018. *Reducing Teacher Workload: Research Report*. London: Department for Education. Accessed 26 May 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/687198/Flying_High_-_Reducing_teacher_workload.pdf.
- Ringelmann, Maximilien. 1913. 'Recherches sur les moteurs animés: Travail de l'homme' [Research on Animate Sources of Power: The Work of Man], *Annales de l'Institut National Agronomique* 11: 1–40.
- Robinson, Glen E. 1990. 'Synthesis of Research on the Effects of Class Size', *Educational Leadership* 47 (7): 80–90.
- Robinson, Glen E. and James H. Wittebols. 1986. *Class Size Research: A Related Cluster Analysis for Decision Making*. Arlington, VA: Educational Research Service.
- Ross, Lee and Richard E. Nisbett. 1991. *The Person and the Situation: Perspectives of Social Psychology*. New York: McGraw-Hill.
- Rowe, Kenneth J. 1995. 'Factors Affecting Students' Progress in Reading: Key Findings from a Longitudinal Study', *Literacy, Teaching and Learning* 1 (2): 57–110.
- Royal Swedish Academy of Sciences. 2019. 'The Prize in Economic Sciences 2019: Research to Help the World's Poor'. Accessed 22 May 2020. www.nobelprize.org/uploads/2019/10/popular-economicsciencesprize2019-2.pdf.
- Rubin, Kenneth H., Julie C. Bowker, Kristina L. McDonald and Melissa Menzer. 2013. 'Peer Relationships in Childhood'. In *The Oxford Handbook of Developmental Psychology, Volume 2: Self and Other*, edited by Philip David Zelazo, 242–75. New York: Oxford University Press.
- Rubin, Kenneth H., William M. Bukowski and Jeffrey G. Parker. 2006. 'Peer Interactions, Relationships, and Groups'. In *Handbook of Child Psychology, Volume 3: Social, Emotional, and Personality Development*, edited by Nancy Eisenberg, William Damon and Richard M. Lerner, 571–645. 6th ed. Hoboken, NJ: Wiley.
- Rubin, Kenneth H., Robert J. Coplan, Xinyin Chen, Allison A. Buskirk and Julie C. Wojciszewicz. 2005. 'Peer Relationships in Childhood'. In *Developmental Science: An Advanced Textbook*, edited by Marc H. Bornstein and Michael E. Lamb, 469–512. 5th ed. Mahwah, NJ: Lawrence Erlbaum Associates.
- Rydell Altermatt, Ellen. 2012. 'Children's Achievement-Related Discourse with Peers: Uncovering the Processes of Peer Influence'. In *Peer Relationships and Adjustment at School*, edited by Allison M. Ryan and Gary W. Ladd, 109–34. Charlotte, NC: Information Age Publishing.
- Sainato, Michael. 2019. 'Low Pay, Large Classes, Funding Cuts: Behind New Wave of US Teachers' Strikes', *The Guardian*, 27 February. Accessed 8 April 2020. www.theguardian.com/education/2019/feb/27/low-pay-large-classes-funding-cuts-behind-new-wave-of-us-teachers-strikes.
- Schleicher, Andreas. 2015. 'Seven Big Myths about Top-Performing School Systems', *BBC News*, 4 February. Accessed 26 May 2020. www.bbc.co.uk/news/business-31087545.
- Schmuck, Richard A. and Patricia A. Schmuck. 2001. *Group Processes in the Classroom*. 8th ed. Boston: McGraw-Hill.
- Shapson, Stan M., Edgar N. Wright, Gary Eason and John Fitzgerald. 1980. 'An Experimental Study of the Effects of Class Size', *American Educational Research Journal* 17 (2): 141–52. <https://doi.org/10.3102/00028312017002141>.
- Sharples, Jonathan, Rob Webster and Peter Blatchford. 2015. *Making Best Use of Teaching Assistants: Guidance Report*. London: Education Endowment Foundation.

- Simpson, Adrian. 2018. 'Princesses Are Bigger than Elephants: Effect Size as a Category Error in Evidence-Based Education', *British Educational Research Journal* 44 (5): 897–913. <https://doi.org/10.1002/berj.3474>.
- Sinatra, Gale M. and Clark A. Chinn. 2012. 'Thinking and Reasoning in Science: Promoting Epistemic Conceptual Change'. In *APA Educational Psychology Handbook, Volume 3: Application to Learning and Teaching*, edited by Karen R. Harris, Steve Graham, Tim Urdan, Adriana G. Bus, Sonya Major and H. Lee Swanson, 257–82. Washington, DC: American Psychological Association.
- Sinclair, J. McH. and R.M. Coulthard. 1975. *Towards an Analysis of Discourse: The English Used by Teachers and Pupils*. London: Oxford University Press.
- 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.
- Slavin, Robert E. 1990. 'Co-operative Learning'. In *The Social Psychology of the Primary School*, edited by C. Rogers and P. Kutnick, 226–46. London: Routledge.
- Sluckin, Andy. 1981. *Growing Up in the Playground: The Social Development of Children*. London: Routledge and Kegan Paul.
- Smith, Anne B., Bruce W. McMillan, Shelley Kennedy and Brenda Ratcliffe. 1988. 'The Effect of Improving Preschool Teacher/Child Ratios: An "Experiment in Nature"', *Early Child Development and Care* 41: 123–38. <https://doi.org/10.1080/0300443880410111>.
- 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>.
- Stasz, Cathleen and Brian M. Stecher. 2002. 'Before and After Class Size Reduction: A Tale of Two Teachers'. In *Taking Small Classes One Step Further*, edited by Jeremy D. Finn and Margaret C. Wang, 19–50. Greenwich, CT: Information Age Publishing.
- Steiner, Ivan D. 1972. *Group Process and Productivity*. New York: Academic Press.
- Stubbs, Michael. 1983. *Language, Schools and Classrooms*. 2nd ed. London: Methuen.
- Symonds, Jennifer E. and Stephen Gorard. 2010. 'Death of Mixed Methods? Or the Rebirth of Research as a Craft', *Evaluation and Research in Education* 23 (2): 121–36. <https://doi.org/10.1080/09500790.2010.483514>.
- The Telegraph*. 2009. 'Limits needed on school size to help discipline, say teachers at ATL conference', *The Telegraph*. Accessed 20 April 2020. <https://tinyurl.com/cxnrr4>.
- Terhart, Ewald. 2011. 'Has John Hattie Really Found the Holy Grail of Research on Teaching? An Extended Review of Visible Learning', *Journal of Curriculum Studies* 43 (3): 425–38. <https://doi.org/10.1080/00220272.2011.576774>.
- The Times*. 2014. 'Thousands of pupils crammed into "cattle classes"', 27 August.
- Tizard, Barbara, Peter Blatchford, Jessica Burke, Clare Farquhar and Ian Plewis. 1988. *Young Children at School in the Inner City*. Hove: Lawrence Erlbaum Associates.
- Wang, Margaret C. and Jeremy D. Finn, eds. 2000. *How Small Classes Help Teachers Do Their Best*. Philadelphia: Temple University Center for Research in Human Development and Education.
- Warnock, H.M. 1978. *Special Educational Needs: Report of the Committee of Enquiry into the Education of Handicapped Children and Young People*. London: HMSO.
- 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.
- Webster, Rob and Peter Blatchford. 2015. 'Worlds Apart? The Nature and Quality of the Educational Experiences of Pupils with a Statement for Special Educational Needs in Mainstream Primary Schools', *British Educational Research Journal* 41 (2): 324–42. <https://doi.org/10.1002/berj.3144>.
- Webster, Rob and Peter Blatchford. 2019. 'Making Sense of "Teaching", "Support" and "Differentiation": The Educational Experiences of Pupils with Education, Health and Care Plans and Statements in Mainstream Secondary Schools', *European Journal of Special Needs Education* 34 (1): 98–113. <https://doi.org/10.1080/08856257.2018.1458474>.
- Webster, Rob, Anthony Russell and Peter Blatchford. 2016. *Maximising the Impact of Teaching Assistants: Guidance for School Leaders and Teachers*. 2nd ed. London: Routledge.
- Whitehurst, Grover J. and Matthew M. Chingos. 2011. *Class Size: What Research Says and What It Means for State Policy*. Washington, DC: Brookings Institution.

- 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.
- Wiggins, Kaye. 2016. 'Teachers Prefer Smaller Class Sizes to Pay Rises', *Times Educational Supplement*, 6 May. Accessed 6 May 2020. www.tes.com/sites/default/files/magazine/pdf/160506.pdf.
- Wiliam, Dylan. 2011. 'What is Assessment for Learning?', *Studies in Educational Evaluation* 37 (1): 3–14. <https://doi.org/10.1016/j.stueduc.2011.03.001>.
- Wiliam, Dylan. 2013. 'The Importance of Teaching'. In *Excellence and Equity: Tackling Educational Disadvantage in England's Secondary Schools*, edited by Jonathan Clifton, 50–57. London: Institute for Public Policy Research.
- Wilson, Valerie. 2006. *Does Small Really Make a Difference? An Update: A Review of the Literature on the Effects of Class Size on Teaching Practice and Pupils' Behaviour and Attainment* (SCRE Research Report 123). Glasgow: University of Glasgow.
- Wiseman, S. 1967. *The Manchester Survey*. Appendix 9 in the Plowden Report. *Children and their Primary Schools*. London: HMSO.
- Woods, Peter. 1986. *Inside Schools: Ethnography in Educational Research*. London: Routledge and Kegan Paul.
- Word, Elizabeth, John Johnston, Helen Pate Bain, B. DeWayne Fulton, Jayne Boyd Zaharias, Charles M. Achilles, Martha Nannette Lintz, John Folger and Carolyn Breda. 1990. *The State of Tennessee's Student/Teacher Achievement Ratio (STAR) Project: Technical Report 1985–1990*. Nashville: Tennessee State University.
- Wrigley, Terry. 2018. 'The Power of "Evidence": Reliable Science or a Set of Blunt Tools?', *British Educational Research Journal* 44 (3): 359–76. <https://doi.org/10.1002/berj.3338>.
- Yeh, Stuart S. 2009. 'Class Size Reduction or Rapid Formative Assessment? A Comparison of Cost-Effectiveness', *Educational Research Review* 4 (1): 7–15. <https://doi.org/10.1016/j.edurev.2008.09.001>.
- Youniss, James. 1980. *Parents and Peers in Social Development: A Sullivan-Piaget Perspective*. Chicago: University of Chicago Press.
- Zahorik, John, Alex Molnar, Karen Ehrle and Anke Halbach. 2002. 'Teaching Reduced-Size Classes: Lessons for Teachers'. In *Taking Small Classes One Step Further*, edited by Jeremy D. Finn and Margaret C. Wang, 3–18. Greenwich, CT: Information Age Publishing.
- Zajac, Robert J. and Willard W. Hartup. 1997. 'Friends as Coworkers: Research Review and Classroom Implications', *Elementary School Journal* 98 (1): 3–13. <https://doi.org/10.1086/461881>.
- Zyngier, David. 2014. 'Class Size Does Matter: At Least for Disadvantaged Students', *The Conversation*, 9 September. Accessed 22 May 2020. <https://theconversation.com/class-size-does-matter-at-least-for-disadvantaged-students-31224>.

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The debate over whether class size matters for teaching and learning is one of the most enduring, and aggressive, in education research. Teachers often insist that small classes benefit their work. But many experts argue that evidence from research shows class size has little impact on pupil outcomes, so does not matter, and this dominant view has informed policymaking internationally. Here, the lead researchers on the world's biggest study into class size effects present a counter-argument. Through detailed analysis of the complex relations involved in the classroom they reveal the mechanisms that support teachers' experience, and conclude that class size matters very much indeed. Drawing on twenty years of systematic classroom observations, surveys of practitioners, detailed case studies and extensive reviews of research, Peter Blatchford and Anthony Russell contend that common ways of researching the impact of class size are limited and sometimes misguided. While class size may have no direct effect on pupil outcomes, it has, they say, significant force through interconnections with classroom processes. In describing these connections, the book opens up the everyday world of the classroom and shows that the influence of class size is everywhere. It impacts on teaching, grouping practices and classroom management, the quality of peer relations, tasks given to pupils, and on the time teachers have for marking, assessments and understanding the strengths and challenges for individual pupils. From their analysis, the authors develop a new social pedagogical model of how class size influences work, and identify policy conclusions and implications for teachers and schools.

'This book is sorely needed. It is evidence based, it is comprehensive, it is engaging, and it will add immeasurably to the debates and literature.' – **John Hattie**, *Laureate Professor, Melbourne Graduate School of Education*

Peter Blatchford is Professor in Psychology and Education at the UCL Institute of Education. He directed large-scale programmes of research on the educational effects of class size differences and pupil–adult ratios (CSPAR), the Deployment and Impact of Support Staff (DISS), collaborative group work (SPRinG), and children with Special Needs (MAST and SENSE projects).

Anthony Russell has had a career in primary teaching and teacher education in UK and abroad, curriculum development in Europe and Asia, research at King's College London and the UCL Institute of Education, university teaching in Europe, five years of advisory work in science and the authorship of over fifty books for teachers and pupils.

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