RETHINKING CLASS SIZE

The complex story of impact on teaching and learning

Peter Blatchford
Anthony Russell

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	*Times Educational Supplement*
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.

1
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.