Rethinking Class Size
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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 to thing to say here is that we have next to no systematic research on the impact of these changes along with class size reductions. 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
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), Fredriksson 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 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.](image-url)
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.

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 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 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.