Sustainable Education Review
The Impacts of School Closures
Analysis Report
by The Continuous Improvement Team
THE IMPACTS OF SCHOOL CLOSURES

When a school closes, particularly a small rural school, there are potential impacts on both the local community and the pupils who attend the school that closes.

In light of the Sustainable Education Review consultation, this research paper discusses the existing evidence that either supports or disputes these impacts, which reflect the fears raised by residents involved in the consultation.

Introduction

Residents fears regarding the impact of their local school closing

Community Impacts:

- Population effects
  - Young families less keen to move to where there is no school
  - Community becomes a “retirement community”
  - Population declines
- (House prices fall (due to above population effects))\(^1\)
- Less community cohesion – School is the “heart of the community”, used for community activities, parents meet and mix at school activities
- Closure of a secondary school impact on local businesses – reduced spend / new businesses less likely to set up there

Educational Impacts:

- School size – perception that small is good, big is bad
- Class size – bigger school, bigger classes, less individual attention possible from teachers
- Travel arrangements will reduce opportunities to participate in extra-curricular activities
- Participation in locally based activities may be reduced leading to their winding up

Community Impacts

Population

In Moray in 2000 four schools closed, three primaries and one secondary: Boharm Primary; Edinvillie Primary; Glenrinnes Primary and; Tomintoul Secondary. Analysis has been carried out to determine any changes in population, economic activity and number of households between the censuses of 2001 and 2011.

An area around each school was defined using Census Output Areas (COAs) since data for school catchment areas is not easily determinable from Census data. COAs were selected based on distance from the school sites providing a confidently representative area for each school. Since the school closed in Tomintoul was a secondary school, the area defined was larger and constituted a Census Standard Sector (post code AB57 9** grouping). A further area, Rothiemay, was included for comparison purposes as it is a similar area in terms of its rural nature but its primary school remains open.

\(^1\) No evidence available to support or dispute this claim so no discussion included in paper
The size of the population in all four closure areas increased between 2001 and 2011 by between ⅓ and ⅔, compared with a 9% reduction in Rothiemay and a 7% rise in Moray as a whole. An age breakdown shows that there were increases in all age groups in all four closure areas, compared with decreases in all but one age group in Rothiemay. Moray as a whole also showed a decrease in 0-15yr olds and increases in the older age groups. The following graph illustrates the percentage increases in each age group for each area. Although the percentage increases are larger in the 60yrs+ age group, this is in line with the changes seen in Moray as a whole. The size of the increases in percentage terms are exaggerated in the smaller areas by the small numbers involved; e.g. in Glenrinnes the 140% rise in the number of people aged 60yrs+ reflects an actual increase of 22 people, from 16 to 38.

A look at changes in the population structure in all six areas shows that in all areas there has been an increase in the proportion of the population aged 60yrs+ and a decrease in the proportion of the population aged 16-59yrs. In the four closure areas the proportion of the population aged 0-15yrs has increased slightly compared with Rothiemay and Moray as a whole, where the proportion has fallen.

Community Cohesion

The impact of the closure of a school on its community depends somewhat on the links that exist between the school and the local community, and the strength of social capital\(^2\) in the community.

Proponents of small/rural schools put forward a number of assumptions about their benefits, which imply good links between school and community, while those in favour of closing rural schools use certain assumptions about their disadvantages as arguments for their closure; these relate to the school itself [1].

Assumed benefits include:
- The school is the heart of the community – it makes the community and its closure will kill the community

\(^2\) Social Capital is defined by the Organisation for Economic Cooperation and Development as “networks together with shared norms, values and understandings that facilitate cooperation within or among groups”.

\[^{1}\\text{[1]}\]
- High levels of parental involvement
- Teacher involvement in the community
- A community facility – meeting place, sports facility, social and cultural resource, delivery point for services, resource for community development
- Economic benefits for the community – local spending, employment

Assumed disadvantages include:
- An inadequate, restricted curriculum
- Cultural limitations
  - Pupil isolation – few contemporaries with whom to socialise
  - Teacher isolation – remoteness from professional developments
  - Lack of preparation for urban society – close relationships that may exist doesn’t prepare pupils to cope with urban environments
- Unit cost is often much higher in small schools

**Social Capital**

As mentioned previously, social capital is defined by the Organisation for Economic Cooperation and Development as “networks together with shared norms, values and understandings that facilitate cooperation within or among groups”. Other definitions include
- Features of social life that enable participants to act together more effectively to pursue shared objectives
- The networks, trust, norms and values that help individuals and groups achieve mutual goals.

Other studies distinguished between different types of social capital. Bonding social capital refers to the strong intra-community ties between similar groups or individuals that brings about support, information and other benefits. Bridging social capital refers to weaker extra-community networks such as between communities and local government or other groups with resources, networks and trust that enables improvements in community well-being.

A study in Finland looking at the role of rural schools in their community and how local residents experience school closures categorised the 23 schools in their study as having weak or strong social capital as follows [10]:
- Weak – low level of social activity in the village and a reluctance to contribute to issues concerning the whole village
- Strong – social life was vital, people were involved with volunteer work and associations.

The study found that due to the way decisions about school closures were made, strong social capital was not beneficial when the community faced the threat of school closure. Although residents rallied together showing bonding social capital, it had no effect on the final decisions.

However, the benefit of strong social capital became apparent after the closure. Communities with strong social capital were more able to adapt to change. Active residents found new ways to get together, especially if they were able to carry on using the school premises, social activity continued.
Often the significance of a school in a rural community is taken as given and only becomes evident when it is threatened. Kearns et al (2009) wrote how schools continue to be seen as self-evident elements of a social structure until they are threatened with closure or amalgamation. Then they become overt objects of and contexts for political contestation [5]. Even where the school is seen as the heart of the community there can be a lack of involvement with the school [7].

The study suggested that local communities should recognise the value of their school in producing and maintaining social capital. A study by Miller (1995) identified three ways that schools may make a contribution to a community, which could help to build social capital [25]:

- Allowing adults to use the facilities to pursue lifelong learning
- By acting as a school-work transition bridge between employers and school leavers
- By developing school based enterprises that place a major emphasis on developing entrepreneurial skills whereby students not only identify potential service needs in their rural communities, but also establish a business to address those needs

Finally, local campaigns to save schools threatened with closure can in themselves build social capital, even if they fail: “even when unsuccessful, they can provide a stimulus for further collective action such as setting up new communal spaces to replace the loss of the school or shifting their attention to other perceived threats to the community” [26].

**The Benefits**

*The School is the heart of the community*

The school as the heart of the community assumes a strong, positive relationship between the school and the local community. However, research suggests that there is wide variation in the relationships that exists between schools and communities and that a strong, positive relationship is not inherent in small rural schools and measures may be necessary to foster its development [1].

Government policies that aimed at raising education standards through the institution of parental choice, enabling parents to choose a school either within or outwith their local catchment area, led to schools becoming subject to a free-market – a successful, high-achieving school would attract more pupils. However, in potential conflict with this are rural policies that advocate the protection of rural communities and their key village services, which include the rural primary school. If a parent chooses a school based on how successful it is, this does not necessarily support the local rural school and would thus be in conflict with protecting rural communities. Parents having freedom of choice of school undermines the idea of a school at “the heart of the community” since the school they choose is determined by its performance not by it being in their local community [2].

It is sometimes the case that people move to an area because they are attracted by the image of the rural idyllic community, which includes the local school and its associated benefits. Any changes threatening this way of life, which includes the view that the local school should be at the heart of the local community, are vigorously challenged [2]. They want to believe the school to be at the heart of the community because that is what fits with the rural way of life they have chosen but that does not mean that it is.

A study of the impact of school closures in four Canadian communities found that many people see the new schools created as growing focal points for new, larger feelings of
community. One resident said “We as a people are being called upon to redefine community” [3].

**Parental Involvement**

There is an assumption that parental involvement is greater in small, rural schools than in larger, more urban schools. A study by Carter (2003) identifies an advantage of small schools as often having less formal and more productive home-school relationships and that parental partnership and support is often strong [4].

In a study by Kearns et al (2009) investigating the impact of the closure of rural schools, some parents indicated that they would be less likely to take on as active a role in a new school, partly because they felt disenchanted after their school closed and partly because they were put off by the bigger school environment and felt their input would have less of an impact [5].

However, in a study by Leonard et al (2001) in three rural schools in Canada, which included surveys with teachers, pupils and parents, interviews and focus groups, the level of parental engagement was felt to be high in some areas and low in others and varied widely amongst schools and stakeholder groups [6].

**Teacher Involvement**

Similar to parental involvement, it is assumed that in small, rural schools teachers have closer links with and are more involved in the local community. Bowie (1994) comments that “the teachers bring new ideas and skills to small communities and often influence the community beyond the school” [7]. Carter (2003) comments that small schools are often highly regarded in the local community “but relationships are not automatically positive and are built up where the head or teachers have good communication skills. With good initiatives (often initiated by the head teacher) small schools can make a significant contribution to learning and living in the area” [4].

However, research in Norway [8] suggests that the teacher role is changing from local cultural leader to a worker on contractual wages and therefore having less involvement in local affairs. In England the role of cultural leader is being distributed more widely as a result of educated, skilled and retired people moving into rural villages and becoming involved in the local school.

A study in Scotland [9] found that teachers in small schools were no more likely than other teachers to be involved in local or community activities in their school’s catchment area and were significantly more likely to live more than five miles away from their school. Another study, carried out in Northern Ireland, found that two thirds of the small rural schools surveyed were unsure of the role they played in their local community. The evidence suggests that the findings of both studies may be related to more general changes in rural community life.

**Community Facility**

As well as providing education to its pupils, a school can provide facilities and resources for the wider community such as a meeting place, sporting facilities, social and cultural functions and a delivery point for local services. It can be a place that brings local people together, a place for shared activities.
In the study by Kearns et al (2009) participants were concerned that over time community activities would reduce without the incentive of school events [5].

A study in Finland [10] found that the closure of a school could result in reduced social activity in a community: “Village community activities are quite small in scope now, particularly since the school has been sold away from the village. There’s no longer a place for activities”. However, this was not always the case: “…The building now has tenants and rental income is being used to cover activities and costs so that the villagers can keep the school in use. There are many sorts of activities on many evenings during the week”.

Kilpatrick et al (2001) highlight that some schools provide a delivery point for services, including health centres, libraries and access to information technology [11].

**Economic benefits**

The level of economic activity can provide an indication of the economic health of an area.

Between 2001 and 2011 the proportion of the population that was economically active increased in three of the four closure areas, reflecting the change seen in Rothiemay and Moray as a whole.

The proportion of the population in employment (part-time, full-time or self-employed) increased in three of the four closure areas, as it did in Rothiemay and Moray as a whole. The proportion of retired people increased in all four closure areas, the same as in Rothiemay and Moray. The proportion of people looking after the home or family decreased in three of the four closure areas, again the same as in Rothiemay and Moray as a whole. All six areas show a net reduction in the total proportion of students, permanently sick/disabled and other economically inactive people.

Although there are a couple of exceptions, the pattern of change in terms of economic activity was predominantly the same in the four closure areas as in Rothiemay and Moray as a whole.

The school acts as an employer and consumer in the local area. Parents may be more likely to spend locally if their child is at a local school. Staff and pupils spend money in the local community. Sell et al (1996) studied the socio-economic impacts of school closures on North Dakota communities. They found a perceived decline in retail sales and the number of businesses in both communities where schools had closed and communities
where schools had gained students due to the consolidation of schools. Those from communities where schools had closed were more likely to think this decline was due to the school closure. However, there was a lack of data to support their belief [12].

**Summary of Benefits evidence**

- **Heart of the community**
  - Strong positive relationship between school and community not inherent
  - Undermined by parental freedom of choice of school
  - Something people want to believe not necessarily fact
- **Parental Involvement**
  - Variable, not definite
  - Potentially more likely – less formal home/school relationships, bigger schools intimidating
- **Teacher Involvement**
  - Variable, not definite, dependent on skills of Head teacher or teachers
  - Teachers role in community changing
  - Maybe no more likely than in bigger schools
- **Community facility**
  - School often fulfils many roles
  - Closure can reduce activities in local community but not inevitable
- **Economic benefits**
  - Assume school provides local employment and uses local services and parents spend locally
  - Pupils and staff spend locally
  - Perceived reduction in business following school closure but insufficient evidence to support

Most of the studies that reviewed the research relating to the impact of schools closures on communities were unable to draw definitive conclusions for a number of reasons.

- Ambiguity around the definition of “rural school”, “rural Community” “small” as it relates to school size.
- Difficulty in generalising from study findings due to the small number of schools examined in the research
- A limited research base and variation in the findings of different studies

Hargreaves et al (2009) state that “generalisation or stereotypical views of rural schools and their communities must be treated with caution” [8].

Leonard et al (2001) conclude that “as this research suggests the assumptions about the benefits of small schools may well be largely unfounded and the consequences for rural schools, at best, uncertain” [6].

**The Disadvantages**

**Curriculum**

Those in favour of closing small rural schools argue that such schools lack the capability and capacity to adequately deliver a full curriculum, due to having fewer staff. For example the Plowden Report (1967) argued that very small primary schools lacked the necessary resources to provide an effective education, limited pupils to a narrow curriculum and were unable to provide the necessary range of specialist teacher
knowledge. The report recommended that every school should contain at least three teachers and 60 pupils [13]. Later the HMI Survey of Primary Education (DES 1978) suggested that a school needed at least eight teachers to provide specialist teaching in an adequate range of subjects [14].

However, in 1999 OFSTED carried out a review of over 18,000 primary schools and found no evidence to suggest that pupils in small primary schools (51-100 pupils) are disadvantaged because their teachers lack sufficient subject knowledge to teach the required broad curriculum. No comment was made though about the quality of teaching in very small schools (up to 50 pupils) [15].

In secondary schools a similar assumption is made that pupils in smaller schools do not have the same range of opportunities as those in larger schools. Analysis carried out by Spielhofer et al (2002) provided some evidence that larger schools offer a wider range of subjects. Of the 23 common GCSE subjects included, the number offered correlated with school size. Larger schools offered a wider range of science options and design technology subjects and were more likely to offer both French and German. Students in larger schools were more likely to take double rather than single balanced science [16].

**Cultural Limitations**

- **Pupil Isolation** – One of the perceived disadvantages of small schools is that pupils have few contemporaries with whom to socialise and this could affect their development. Composite classes are often necessary, requiring teachers to teach a range of ages and abilities, which can be very demanding. A survey by HMI in 1982 [17] suggested that mixed-age classes may cause social difficulties for children, who may not have enough contact with others in their peer group resulting in a lack of stimulus and competition. Performance may also be affected: the HMI survey of primary schools (1978) found that 11yr old pupils in mixed age classes achieved lower scores on reading and mathematics tests than pupils in single age classes [18].

However, a study in 1987 argued that mixed age classes enable children to learn together and benefit from the mix of ages [19]. Pupils do not have to make as many transitions between forms as in larger schools and do not have to adjust to as many different teachers [20]. Since teachers often have the same pupils for a longer time in small schools they may be able to develop closer relationships and understand pupils’ needs better than in larger schools.

A study looking at the impact of school closures in four rural communities in Canada found that after closures and amalgamations, children had friends from all four communities rather than just one. Parents said that more contact with children from other communities gave their own children a wider perspective on the world [3].

- **Teacher Isolation** – It is argued that teachers in small schools may feel remote from professional developments and may doubt their effectiveness and their teaching commitment and professionalism [19]. It has been suggested that teachers in small schools have less opportunity to attend training to gain further expertise due to the lack of cover for absences [21].

However, the OFSTED review indicated that teachers in small schools were no less likely than teachers in larger schools to attend training courses, observe colleagues and have visits from advisers [15].
A study by Hopkins and Ellis [20] suggested that communication between staff members can be easier enabling the sharing of ideas and experiences, helping to create a positive atmosphere and allowing pupils’ progress to be more closely monitored.

- **Lack of preparation for urban society** – It is argued that the close relationships that may exist in small communities does not prepare pupils to cope with urban environments.

Many of the assumed advantages of small rural schools may leave pupils ill-prepared for the much larger secondary schools they will attend. For example the reduced number of transitions and different teachers that are a possible advantage of composite classes in small schools means pupils will have little experience of these things when they move up to secondary school. Pupils from small schools who may have been accustomed to close relationships with their teachers may be quite taken aback by the less individual relationships assumed to be the norm in larger schools.

**Higher per pupil cost**

It is often the case that the per-pupil cost in a small school is much higher than in a larger school. It is also suggested that with the time and labour costs involved, small schools struggle to cope with change.

In an environment where Government policies create conflicting aims – freedom of choice for parents and protecting rural communities – Local Authority areas with a high proportion of small schools are faced with the added complication of balancing school and community service delivery with cost effectiveness. The Local Authority has overall responsibility for the provision of education throughout the authority area and the cost of funding small and small schools is disproportionately high compared with larger schools raising the question is it cost effective? Is it acceptable that pupils in small schools receive more funding per head for their education than pupils in larger schools?

However, the evidence suggesting money will be saved by closing small schools is inconclusive. A study by Aston University (1981) suggested that a LA would be able to save virtually all the cost of a small school by transporting pupils [22]. However, Forsythe (1983) found that in 4 of the 15 school closures he studied, no financial savings were made and no conclusions could be drawn from the other 11 cases [23].

In a report on “Small rural schools in Northern Ireland” (2002) Prof. Tony Gallagher made the following points relating to cost:

- The extra resources required to run rural schools are justified as an investment in rural communities that otherwise receive little government expenditure.
- Many small schools cost only a little more than larger school in per capita terms but some cost a lot more because of unused capacity. An alternative to saving money through closing a school might be to consider ways of making more efficient use of this extra space. [24]

**Summary of Disadvantages Evidence**

- **Curriculum**
  - Suggestion that small primary schools unable to teach full curriculum due to fewer staff.
  - Most recent research (1999) found no evidence to support this in small schools (51-100). No comment regarding smaller schools.
Suggestion that smaller secondary schools provide fewer opportunities than larger ones. Some evidence to support this - Of the 23 common GCSE subjects included, the number offered correlated with school size.

- Cultural Limitations
  - Pupil Isolation
    - Composite classes may lead to social difficulties and negatively affect performance
    - Composite classes may benefit pupils – fewer transitions, fewer teacher changes, closer relationships with teachers
  - Teacher Isolation
    - Teachers feel remote from professional developments, doubt their effectiveness & professionalism
    - Teachers may be less able to attend training due to lack of cover
    - Evidence indicates no less likely to attend training
    - Communication between teachers can be easier in small schools
  - Lack of preparation for urban society
    - Close relationships in small schools does not prepare pupils for urban environments
    - Assumed advantages of small schools may leave pupils ill-prepared – fewer transitions and teachers, close relationships with staff

- Higher per pupil cost
  - Cost per capita generally higher
  - Is it cost effective? Is it acceptable for funding per pupil to be different depending on size of school?
  - Closing schools may not save money
  - Extra resources may be justified in areas that otherwise receive little government expenditure
  - Make better use of space rather than close schools with unused capacity

**Educational Impacts**

**School Size**

*Primary Schools*

There is a perception that small schools are better, particularly in the primary sector but also to an extent in the secondary sector. The National Foundation for Educational Research (nfer) was commissioned by the Local Government Association (LGA) to explore the impact of school size on performance [16]. Their research included a literature review and also some original analysis using the national value-added dataset (NVAD). Using value-added data takes account of prior attainment of the pupils involved. The datasets used provided matched data at pupil level that included details of gender, age and national test results. To explore the effect of primary school size on performance, the primary NVAD linked key stage 1 (1997) and key stage 2 (2001) results. The secondary NVAD used to explore the effect of secondary school size on performance linked key stage 2 (1996) and GCSE (2001) results. For information, the following table details how the key stages relate to Scottish school years:

<table>
<thead>
<tr>
<th>Age range</th>
<th>Test age &amp;</th>
<th>English</th>
<th>Scottish equivalent</th>
</tr>
</thead>
</table>

11
### Key Stage 1
- Ages 5-7
- 7yrs, year 2
- Years 1 – 2
- P2 – P3

### Key Stage 2
- Ages 7-11
- 11yrs, year 6
- Years 3 – 6
- P4 – P7

### Key Stage 3
- Ages 11-14
- 14 yrs, year 9
- Years 7 – 9
- S1 – S2

### Key Stage 4
- Ages 14-16
- 16yrs, year 11
- Years 10 – 11
- S3 – S4

The OFSTED (1999) review, however, found that small (51-100 pupils) and very small (up to 50 pupils) performed better on average than larger schools. The report highlighted though that this performance could be due to the fact that the majority of small schools are in relatively affluent areas with above average indicators of socio-economic advantage. This is supported by the finding that when small school results were compared with other schools in similar socio-economic circumstances there was little difference in performance “if anything, the balance of judgement moves in favour of larger schools” [15].

A literature review conducted in the USA in 1991 stated that “A number of studies conducted during the past 20 years, particularly at the elementary school level, have found small school size to have an independent, positive effect upon achievement” [28].

The same study then looked at the influence of various school characteristics on educational outcomes and found that school size was the third most influential factor and was negatively related, meaning that smaller schools have beneficial effects on student achievement and other educational outcomes after controlling for socio-economic status. However, the study used school level data rather than pupil-level data and took no account of pupils' ability at intake [28].

A study by Lamdin (1995) also found the effect of school size to be generally negative (small is better) but the effect was never statistically significant. Interestingly he observed that the perceived benefits of small schools and large schools could cancel out as school size increases so no significant relationship between pupil achievement and school size would be observed. This does not mean that size has no impact but that there are different advantages attached to small and large schools. It could be that medium size schools are better or worse than small or large schools. However, when Lamdin tested this hypothesis he could find no evidence to support it [29].

In contrast a study by Mortimer et al (1988) concluded that the best results were achieved in middle to small sized with a junior roll (yrs 3-6 Eng. / yrs 4-7 Scot.) of around 160 or fewer pupils. Both very small schools and large schools were less effective. The ideal primary had to be large enough to provide a range of experiences, resources and specialisms but small enough to avoid other problems: “it was the schools with between one and two form entry which were likely to be the most effective” [30].

Some of the possible benefits of small schools, such as ease of communication between staff and closer links with parents, could explain the findings of Mortimer et al (1988) that the best results were achieved in smallish primary schools – large enough to avoid the specific problems of very small schools but small enough to enjoy the potential benefits of small schools.

However, other published research has identified very little if any impact of school size on performance. In most cases differences that are found can be explained by other factors;
once these factors, such as prior attainment and socio-economic status, are taken into account, no significant effect of school size was found.

The analysis carried out using the national value-added dataset (NVAD) found no significant effect of school size on any of the Key Stage 2 outcomes measured. There was a differential effect of school size on pupils of different prior ability with regard to KS2 mathematics: as school size increased, pupils with lower KS1 attainment tended to perform worse at KS2 mathematics. There was no similar effect on pupils who attained better than average at KS1. For example pupils who achieved level 1 at KS1 went on to achieve about level 3.1 in schools with 10 pupils in year 6, reducing linearly to about level 2.8 in schools with 210 pupils in year 6. However, pupils who achieved level 3 at KS1 achieved about level 4.8 in schools with 10 pupils in year 6 reducing to about level 4.7 in schools with 210 pupils. For pupils who achieved level 2 at KS1, the difference in level achieved at KS2 for pupils in schools with 10 or 210 pupils in year 6 was about 0.2.

So the lower the level achieved at KS1, the greater the effect of school size on KS2 achievement.

**Secondary Schools**

Secondary schools need to be large enough to cater for a wide range of abilities and offer a wide range of GCSE options. However, there is a general dislike of very large schools. However, there is very little actual evidence about the impact of school size on performance in secondary schools.

The only statistical evidence is a study by Luyten (1994). Five existing datasets from the Netherlands, Sweden and the USA were analysed, controlling for gender, achievement motivation, socio-economic status, cognitive aptitude and curriculum track. The study revealed no significant relationship between school size and achievement that was independent of student characteristics [31].

The analysis using the NVAD for secondary school pupils found significant effects of school size for all GCSE outcomes measured, independent of pupil, school or Local Education Authority (LEA) background. As school size increased, performance on all GCSE outcomes improved, although only up to a certain school size. When the size of year 11 exceeded a certain number of pupils, there was a negative impact on pupils’ achievement suggesting that very large and very small schools have a detrimental effect on performance.

A number of differential effects of school size were observed, depending on several background factors. Low-ability pupils and pupils in schools with low numbers eligible for free school meals tended to achieve more highly in smaller schools; that is the optimum school size for these categories of pupils was smaller than the overall optimum. Conversely, high-ability pupils and pupils in schools with high numbers eligible for free school meals tended to perform better in larger schools; that is the optimum school size for these categories of pupils was larger than the overall optimum. There was virtually no difference in the optimum school size for boys and girls in mixed schools.

---

3 Average KS2 level, maths level, English level, science level
4 At the end of KS1 pupils should be between level 1 (lowest) and level 3 (highest)
5 Total GCSE point score, average GCSE point score, number of GCSEs taken, mathematics point score, English language point score, total science point score, average science point score, number of science GCSEs taken.
Optimum Size of Yr 11 (S4) for highest average GCSE point score

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>180</td>
</tr>
<tr>
<td>0% eligible for Free School Meals</td>
<td>162</td>
</tr>
<tr>
<td>16% eligible (ave) for Free School Meals</td>
<td>183</td>
</tr>
<tr>
<td>50% eligible for Free School Meals</td>
<td>227</td>
</tr>
<tr>
<td>Girls (mixed schools)</td>
<td>189</td>
</tr>
<tr>
<td>Boys (mixed schools)</td>
<td>181</td>
</tr>
<tr>
<td>Low prior attainment</td>
<td>162</td>
</tr>
<tr>
<td>Average prior attainment</td>
<td>175</td>
</tr>
<tr>
<td>High prior attainment</td>
<td>187</td>
</tr>
</tbody>
</table>

The information about school size (primary) and year 11 (S4) size (secondary) can be used to calculate an approximate optimum school size. Using staying on rates in Moray (75% o S5, 17% to S6) gives the following school sizes:

<table>
<thead>
<tr>
<th></th>
<th>P4-P7 / Yr11 (S4)</th>
<th>S1-S4</th>
<th>S5</th>
<th>S6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>160</td>
<td>720</td>
<td>135</td>
<td>31</td>
<td>886</td>
</tr>
<tr>
<td>0% eligible for Free School Meals</td>
<td>162</td>
<td>648</td>
<td>122</td>
<td>28</td>
<td>797</td>
</tr>
<tr>
<td>16% eligible (ave) for Free School Meals</td>
<td>183</td>
<td>732</td>
<td>137</td>
<td>31</td>
<td>900</td>
</tr>
<tr>
<td>50% eligible for Free School Meals</td>
<td>227</td>
<td>908</td>
<td>170</td>
<td>39</td>
<td>1117</td>
</tr>
<tr>
<td>Girls (mixed schools)</td>
<td>189</td>
<td>756</td>
<td>142</td>
<td>32</td>
<td>930</td>
</tr>
<tr>
<td>Boys (mixed schools)</td>
<td>181</td>
<td>724</td>
<td>136</td>
<td>31</td>
<td>891</td>
</tr>
<tr>
<td>Low prior attainment</td>
<td>162</td>
<td>648</td>
<td>122</td>
<td>28</td>
<td>797</td>
</tr>
<tr>
<td>Average prior attainment</td>
<td>175</td>
<td>700</td>
<td>131</td>
<td>30</td>
<td>861</td>
</tr>
<tr>
<td>High prior attainment</td>
<td>187</td>
<td>748</td>
<td>140</td>
<td>32</td>
<td>920</td>
</tr>
</tbody>
</table>

The presence of a sixth form had a significant impact on pupil performance on all outcomes except number of science GCSEs taken. Pupils in schools with a large sixth form performed better at GCSE than those in a school with no sixth form. However, pupils in a school with a small sixth form performed worse at GCSE than those in a school with no sixth form. The size of sixth form above which pupils seem to benefit in terms of average GCSE point score is about 160 and ranges between 110 and 180 for the different outcome variables, except for the number of science GCSEs taken, for which the crossover size of sixth form was about 260.

**Class Size**

**Primary Schools**

Small schools with small cohorts of pupils may have smaller class sizes. It is often assumed that in smaller classes teachers can provide more individual attention to each pupil, which might improve performance. However, the research evidence is inconclusive.

Some studies have reported that pupils perform better in larger classes although a study by Blatchford and Mortimore (1994) [32] identified three factors that could have influenced this finding: low-attaining students are put in smaller classes; teachers change their style in larger classes; and better teachers are given larger classes.
Project STAR was a four-year longitudinal class-size study funded by the Tennessee General Assembly and conducted by the Tennessee State Department of Education. The focal intervention was the size of classrooms during kindergarten and the early elementary grades. In the course of the study, over 7,000 students in 79 schools were randomly assigned into one of three classroom situations: small class (13 to 17 students per teacher), regular class (22 to 25 students per teacher), or a regular class with a full time teacher’s aide. Analysis of test performance conducted as part of the study found that smaller class sizes resulted in higher achievement than either of the regular class size situations [33].

A study by Felgate et al (2000) [34] using National Numeracy Project data for 87,300 pupils in 768 primary schools in 15 LEAs found tentative evidence, after controlling for background variables, that pupils in larger classes were making less progress than might be expected.

The study by Blatchford et al (2002) [35] followed 9,330 children in 200 schools in 8 LEAs. After controlling for a number of factors, such as gender and school entry ability, it was found that pupils in smaller classes performed better in literacy and mathematics than those in larger classes. They also found that small classes work best for pupils not eligible for free school meals and for low-achieving pupils in the case of literacy.

Between 2000 and 2003 the Institute of Education in England conducted the Class Size and Pupil Adult Ratio (CSPAR) study, an in-depth study assessing the educational consequences of class size and pupil-adult ratio differences by examining relationships between class sizes and other factors. This project tracked over 10,000 pupils in over 300 schools from school entry (at 4/5 years) to the end of the primary school stage (11 years).

The study found that in the reception year (4/5yrs) attainment in literacy and mathematics was significantly better in smaller classes (under 25), particularly in literacy for pupils with the lowest school entry scores. The effects of class size on literacy progress were still evident at the end of the second year though by the end of third year, they were no longer clear. There were no clear longer-term effects of class size differences on mathematics achievement (see Blatchford et al 2003) [36].

Other key features of smaller and larger classes, relating to classroom processes are as follows:

**Smaller classes:**
- More time when individual pupils are the focus of a teacher’s attention
- More active interaction between pupils and teachers
- More pupil engagement, particularly for pupils attaining at lower levels

**Larger classes:**
- More time spent by pupils interacting with each other
- More time spent by teachers directly teaching the substantive content of the subject
- More time spent on non-teaching tasks like registration

The NVAD analysis did not find any significant effect of class size on any of the outcomes measured.
Secondary Schools

There is very little evidence on the importance of class size on secondary school attainment.
Two studies that looked at expenditure per pupil on teachers rather than number of pupils in a class found that a lower pupil teacher ratio was associated with higher attainment in mathematics and science at Key Stage 3 and with higher attainment in science at GCSE. However, it is not clear from the study whether the increased expenditure on teachers was used to reduce class sizes or to give teachers more non-contact time or training [37, 38].

A literature review by Wilson (2002) [39] advises caution in interpreting positive correlations in secondary schools between larger classes and pupil attainment as schools tend to place less able children in smaller classes.

The NVAD analysis found just one significant effect of class size in secondary schools and that was on the number of GCSEs taken by pupils: the larger the class size the more GCSEs pupils were entered for.

Participation in Extra-Curricular Activities including locally based activities

It has been suggested that if, as a result of a school closing, pupils have to spend more time travelling / travelling on a school bus to and from school, their participation in extra-curricular activities will reduce, due in part to longer travel times and also because of the set time of school buses.

A study in Rural Nova Scotia [3] reports that the additional travel times of some students following the amalgamation of their school with another prevented their participation in extracurricular activities. A survey conducted by the parents of pupils from one of the communities in the study found that with the exception of hockey, no students from their community were taking part in team sports; all have one-way bus-rides longer than 30mins.

A study in West Virginia, USA, investigated the relationship between rate and degree of participation in extracurricular activities and travel time to school. The study was based on four counties within West Virginia; two had experienced significant school consolidation and were designated “high consolidation”, and two had not experienced extensive consolidation and were designated “low consolidation”. Key findings of the study are as follows [40]:

- Significantly higher percentage of students from high consolidation counties take the school bus than from low consolidation counties
- Students from both high and low consolidation counties that take the school bus have an average travel time of more than twice that of students using other modes of transport
- The average length of school bus journey is significantly higher for students from high consolidation counties than for students from low consolidation counties
- Nearly a third of students from high consolidation counties that take the school bus travel at least 60mins each way compared with 10.5% of school bus travellers from low consolidation counties
- Of the students from high consolidation counties that use other modes of transport 5% have a journey of at least 60mins compared with 2% of students from low consolidation counties that use other modes of transport.
• Significantly fewer students in high consolidation counties participate in extracurricular activities than in low consolidation counties.
• Students who participate are engaged in fewer activities compared with students in low consolidation counties.
• Significantly fewer students who take the school bus participate in extracurricular activities than students who use other modes of transport. There was no difference between students from high and low consolidation counties.
• Participating students who take the school bus engage in significantly fewer activities than participating students who use other modes of transport. There were no significant differences between high and low consolidation counties within all modes of transport.
• The longer the commute to school the less the participation. The differences between high and low consolidation counties and no, average and high participation levels were all significant.
• Significantly fewer students with bus rides of 60mins and over participated in one or more extracurricular activities.

Summary of Educational Impacts

• School size
  o Primary
    ▪ Mixed findings – Some studies found small schools led to higher achievement but these didn’t control for socio-economic status or used school-level not pupil-level data. Others found no statistically significant effects of school size on performance. One study suggested an optimum size – large enough to avoid the specific problems of very small schools but small enough to enjoy the potential benefits of small schools.
    ▪ NVAD analysis found no significant effects of school size on performance
    ▪ NVAD analysis found non-significant effect – as school size increased, pupils with lower KS1 attainment tended to perform worse at KS2 mathematics. Same effect not seen in pupils with higher than average KS1 attainment.
  o Secondary
    ▪ Only one study, which found no significant relationship between school size and achievement that was independent of student characteristics.
    ▪ NVAD analysis found an optimum size for schools to maximise achievement. Some variation for different variables but between 162 and 189 in yr11 / S4 (800 to 930 in school) except for schools where 50% of pupils are eligible for Free School Meals, where optimum size is 227 (1,100 in school).
    ▪ Presence and size of sixth form also influences GCSE performance. A sixth form will improve performance at GCSE if it has more than about 160 pupils. Less than that and it may have a negative effect on GCSE performance.

• Class size
  o Primary
    ▪ Most studies indicate that pupils in smaller classes performed better than those in larger classes in literacy and mathematics
    ▪ One study found that the beneficial effect of smaller class size in the reception year may continue for a further year in literacy performance but no longer than that and does not continue at all in mathematics performance.
Smaller classes:
- More time when individual pupils are the focus of a teacher’s attention
- More active interaction between pupils and teachers
- More pupil engagement, particularly for pupils attaining at lower levels

Larger classes:
- More time spent by pupils interacting with each other
- More time spent by teachers directly teaching the substantive content of the subject
- More time spent on non-teaching tasks like registration

o Secondary
  - Very little evidence suggesting a relationship between class size and attainment.

Participation in Extracurricular activities including locally based activities: The evidence indicates that both the rate and degree of participation in extracurricular activities are lower for pupils that have a longer journey to school and/or take the school bus.

3-18 campuses

The Official Line from the Scottish Government re: 3-18 “all-through” schools is:
“Three-to-18 schools aim to provide a seamless transition through each stage of Curriculum for Excellence from nursery to primary to secondary education.

“A 3-18 school campus may not be the best option to meet the educational needs of children in every area. It is a decision the local authority must take in consultation with the local community.”

Education directors argue that “with the introduction of Curriculum for Excellence and its 3-18 curriculum, all-through schools make more sense than ever, they reason. They ease transitions; allow teachers to move seamlessly across sectors; and give primary children access to facilities usually the preserve of secondary, such as science labs and technical and home economics departments”. Directors acknowledge that links with associated primaries outside the 3-18 school will have to be carefully managed to ensure these children feel as involved in the life of the secondary as those who have grown up on the same site.

The Director of Educational and Social Services in East Ayrshire, where there are two 3-18 all-through schools established and a third in the pipeline, advises that parental concerns around 3-18 schools included fears around bullying, because very young children would be mixing with much older youngsters, and primary children being exposed to “teenage issues” too young.

Consultation exercises for the Sustainable Education Review sought views on the ideas of a 3-18 campus in Keith and Speyside ASGs.

Parental concerns included:
- Too big
- Too far for some to travel
- Not suitable environment for young children, mixing with teenagers
- Denies sense of responsibility from seniority in primary school
- Not good for education

Pupil concerns included:
- Increased risk of bullying
- Issues with size – busy/crowded, won’t know everyone, getting lost
- Issues with age range
- Same place all school life
- Issues with transport/traffic
- Issues for staff
- Cost

Some local authority areas already have 3-18 campus schools, including Argyll & Bute, East Ayrshire and Perth & Kinross.

In Argyll and Bute Lochgilphead and Rothesay both have 3-18 campus schools. In both schools, the three age groups – pre-school, primary and secondary – have separate sectors or buildings, with some shared facilities, e.g. assembly hall, P.E. areas and dining facilities. Rothesay joint campus has a playground that is shared by children from age 3 to 18, with breaks at different times for different age groups to minimise potential conflicts. There is also a small designated outdoor area has been provided for the pre-5 unit. This provides a sheltered and secure outdoor area for play. Despite initial parent and staff concerns, the school reports that bringing together children from such a wide age range has improved behaviour and transitions between school stages. A number of interesting outdoor features have been established post-occupancy by enthusiastic parents and teachers. Departure times at both Lochgilphead and Rothesay are also staggered to minimise potential conflicts.

In East Ayrshire there are two 3-18 campuses in Kilmarnock, one has pre-school, primary and secondary while the other has primary, secondary and a special school.

In Perth and Kinross there are four 3-18 campus schools incorporating nursery, primary and secondary schools. All have online education resources available for times when the weather prevents pupils attending school, to minimise the impact on pupils’ education.
References

1. Research evidence on impact of rural school closure on local community – short literature review, February 2012


32. Data and reports about Project STAR are available online at http://www.edweek.org/media/star.pdf


