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The impact of school sixth form size on educational attainment of pupils at Key Stage 5: Executive summary

1. Background

- 1.1 The Learning and Skills (Wales) Measure 2009 provides a statutory basis for 14-19 Learning Pathways. It places an obligation on 16-18 years education providers to develop a local curriculum offer of at least 30 course options, including a minimum of five general courses and five vocational courses. This offer is to be in collaboration with other post-16 providers.
- 1.2 Delivering the 30 course options is more challenging for schools with small sixth forms. This has led to concerns over the ability of such schools to deliver the curriculum cost- effectively and with the maximum benefit for learners.
- 1.3 The literature on school performance also raises questions over what is the most effective size of a sixth form school^{1,2,3} and the potential negative impact on KS4 attainment in schools where small sixth forms may be subsidised from non-sixth form budgets.
- 1.4 In light of the above concerns the Welsh Government commissioned an analysis of the impact of school sixth form size on educational attainment of pupils at Key Stage 5 (KS5), controlled for exam scores two years earlier (i.e. KS4).

2. Method

- 2.1 This analysis has been conducted on individual pupil data from the Pupil Level Annual Schools Census (PLASC) and Welsh Examinations Database for the years 2011-2014.
- 2.2 Pupil total point score per qualification at 18 (KS 5) was the main outcome variable. Additional measures of educational attainment were also used: pupils achieving at least three A*-A at A level and those awarded at least three A*-C grades at A level. The additional measures of educational attainment were included to enable better

¹Ofsted. (1996). *Effective sixth forms*. London: Ofsted.
<http://ofsted.gov.uk/resources/effective-sixth-forms>

²Audit Commission. (1996). *Trading Places. The Supply and Allocation of School Places*. London: Audit Commission.
<http://archive.audit-commission.gov.uk/auditcommission/subwebs/publications/studies/studyPDF/1182.pdf>

³Estyn. (2013). *School size and educational effectiveness*. Cardiff: Estyn.
<http://www.estyn.gov.uk/english/docViewer/295686.3/school-size-and-educational-effectiveness-december-2013/?navmap=30,163>

differentiation of pupil attainment, as over the past five years the average proportion of pupils achieving the Level 3 Threshold at KS5I has been 96.7 per cent.

- 2.3 To allow the estimation of 'value added' in the sixth form, controls were included for individual pupil's KS4 level 2 inclusive and KS4 capped average points score.
- 2.4 In addition to number of pupils in a school's sixth form, other possible influences on educational attainment were used in the estimation, including school size, school type (i.e. the governance structure, including faith-based or non-faith-based), school location (rural or urban), value added between Key Stage 2 (KS2) and KS4, medium of provision (e.g. English, Welsh, bilingual) and the socio-economic profile of pupils (e.g. whether eligible for free school meals).

3. Findings

- 3.1 Whether sixth form size has an impact upon sixth form educational performance varies according to the measure of sixth form performance used i.e. A level Point Scores, A*-C grade at A level, or A*-A grade at A level. Regression analysis found no good evidence that A level point scores were diminished or increased by larger sixth forms, over the range of sixth form size in Wales, when many controls were included. Defining sixth form size as the total of Year12, Year 13 and Year14 pupils, the minimum sixth form size was 12 pupils and the maximum 492 pupils.
- 3.2 A particular control was the excess of Year 12 over Year 13 pupils, which was associated with substantially lower individual pupil A level points scores. The reason for this is unknown and warrants further investigation.
- 3.3 The same is true for three A*-C grade A level performance; when Year 12 numbers are the same as Year13 there is no size effect on sixth form performance.
- 3.4 However, for three A*-A levels, a larger sixth form does appear to be beneficial over the entire size range currently observed in Wales. A pupil's chance of achieving these grades approximately doubles between sixth form sizes of around 100 (five per cent probability) and 500 (11 per cent probability). As noted above, the maximum sixth form size in the dataset analysed was 492 pupils, while the average sixth form size was 226 pupils. A caveat is that this achievement measure, and the three A*-C grade indicator, are considered experimental; as they are still being developed internally by the Welsh Government, and are not at present used by schools.
- 3.5 School-level value added between KS2 and KS4 has no independent influence on a pupil's A level point score educational value added in the sixth form. Since pupils generally remained at the same school this may suggest that there is no educational advantage from linking education between 11 and 16 with that between 16 and 18. The same is true for the probability of a pupil gaining at least three A*-C grades at A level and for achieving at least three As at A level.
- 3.6 The pupil based deprivation measure (i.e. FSM eligibility), consistently influenced A level score across models, regardless of sixth form size, but school-based deprivation (i.e. the proportion of pupils who, in January 2014, lived in the top 20 per cent deprived LSOAs from WIMD 2014) did not. The school-based deprivation

measure does have an influence on the chances of a student obtaining at least three A*-A grades.

- 3.7 With regards to ethnicity, ethnic categories with more than 250 cases were included as separate variables in the analysis (i.e. 'White British' (91.79 per cent), 'Information refused' (0.89 per cent), 'Bangladeshi' (0.7 per cent), 'Information not obtained'(0.67 per cent), and 'Pakistani' (0.55 per cent), see Appendix B, Table 10). Pupils with 'White British' (WBRI) ethnicity performed less well than others, with around 44 A level points less in one model, as did pupils in schools with high proportions of such pupils in the sixth form. Pupils in schools with a relatively high proportion of Bangladeshi pupils achieved lower A level score value added. Controls for eligibility for free school meals included in the model demonstrated that the effect of high proportions of Bangladeshi pupils was not due to their associated levels of FSM eligibility. Moreover, Pakistani pupils with an average 19 per cent FSM eligibility, compared to an average 21 per cent for Bangladeshi pupils, did not experience a similar A level performance. A difference between Pakistani and Bangladeshi pupils was the proportion of those pupils in the sixth form. Pakistani sixth form pupils were found to be less concentrated by school than Bangladeshis; the highest proportion of Pakistani sixth form pupils was 14 per cent.
- 3.8 Female pupils consistently achieved higher A level score value added than males, but pupils at schools with a higher proportion of females in the sixth form did not perform better. The female score approximately offsets the 'White British' performance so that female pupils of this ethnicity achieve about the average point score.
- 3.9 Pupils at English medium schools had lower A level scores than those at bilingual or Welsh medium schools.
- 3.10 School location (i.e. whether based in a rural or urban area) itself had little effect on individual pupil A level score value added.
- 3.11 Class size data for sixth forms was not available and therefore the impact on educational achievement, if any, could not be assessed.

4. Conclusions

- 4.1 The analysis suggest that the number of pupils in a sixth form does not affect their educational performance as measured by A level point score, or at least three A*-C grade A levels. But larger numbers in Year 12 and the excess of Year 12 numbers over Year 13 do adversely affect scores. The reasons for this result remain to be investigated.
- 4.2 There is also evidence that the probability of a student achieving at least three A* or A grade A levels is related to sixth form size. Between sixth form sizes of 100 and 500, the probability of this success doubles (from five per cent to 11 per cent), holding constant a very wide range of controls. This level of performance is boosted by a large Year 13 and by a smaller Year 12. However, as noted, this achievement measure and the three A*-C grade indicator are still under development by Welsh Government, they are not currently used by schools, and the experimental nature of these measures should be borne in mind when considering this result.

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Available at: <http://gov.wales/statistics-and-research/impact-school-sixth-form-size-educational-attainment-key-stage-5/?lang=en>

Views expressed in this report are those of the researchers and not necessarily those of the Welsh Government

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