

Narrowing the Curriculum? Contemporary trends in provision and attainment in the Scottish Curriculum

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Introduction

In 2004, the Scottish Executive set out a number of goals – a rationale to justify the change of direction represented by its new Curriculum for Excellence. These included:

- greater choice and opportunity, earlier, for young people, to help them realise their individual talents and to help close the opportunity gap by better engaging those who currently switch off from formal education too young
- more skills-for-work options for young people, robustly assessed and helping them to progress into further qualifications or work
- more space in the curriculum for work in depth, and to ensure that young people develop the literacy, numeracy and other essential skills and knowledge they will need for life and work
- young people achieving the broad outcomes that we look for from school education, both through subject teaching and more cross-subject activity
- more space for sport, music, dance, drama, art, learning about health, sustainable development and enterprise, and other activities that broaden the life experiences – and life chances – of young people (Scottish Executive, 2004, p.4)

The abovementioned goals suggest a breadth of study through the new curriculum, and indeed this appeared to be a continuation of a tradition of strongly valuing breadth in the Scottish school curriculum (SOED, 1992; Raffe, Howieson and Tinklin, 2007). It is therefore somewhat surprising that, 13 years later, a controversy rages about a narrowing of the curriculum (Brown, 2014); and indeed this is a narrowing that is claimed to be a result of developments within the new curriculum itself – or more specifically, the introduction of new national qualifications at levels 4 and 5 in the Scottish Credit and Qualifications Framework¹ from 2013, which were designed to be consonant with the new curriculum. To some extent, this controversy has been fuelled by a report (Scott, 2015), submitted as evidence to the 2015 OECD review of Curriculum for Excellence (OECD, 2015).

There are several putative aspects to this curricular narrowing, including: 1] a decrease in the total number of subjects studied by students in the final phase of the compulsory education (school year S4²) from 8, under the previous system, to 6 (and in some cases 5), within the new system; 2] a decline in uptake of non-core subjects, such as modern languages, arts, humanities and technology, at this compulsory stage; and 3] a subsequent decline in uptake of these subjects in the post-compulsory stage, as lack of choice in the earlier years translates into lack of experience required for study at more senior levels. The resultant controversy has been high-profile. In an article following the annual release of examinations results in August 2017, the Guardian reported that politicians in the Scottish Parliament were expressing ‘concern that the Scottish curriculum was narrowing, after the Scottish Qualifications Authority figures showed the numbers sitting modern languages at Higher fell by 6% overall, with history down by nearly 4% and geography by 2.6% (Guardian, 2017). Moreover, this debate is not a flash in the pan; similar concerns were raised in 2016 in an article in the Times Educational Supplement:

The number of qualifications being pursued by Scottish pupils [...] has dropped sharply since the new curriculum and qualifications were introduced, as has attainment, new research

shows. The situation for modern languages was “near critical” because of the drop in pupils enrolling for these subjects in S4, according to Dr Jim Scott from the University of Dundee. Overall since the new qualifications were introduced in 2014, enrolment at Scottish qualifications levels three to five has dropped by 17 per cent and the number of pupils passing at these levels has dropped by 24 per cent, he found. (TES, 2016)

This paper investigates these trends. Our intention is to ultimately engage with them in 3 phases: 1] an initial exploration of the publicly available data relating to enrolment and attainment across National Qualifications at levels 3-5 (aggregated at local authority level, and following Scott’s 2015 analysis); 2] a deeper analysis that compares more nuanced attainment data (e.g. aggregated at school level) with other datasets, for example those relating to deprivation; and 3] qualitative research to investigate the causative factors shaping these trends in provision and enrolment. The following research questions guide our research:

1. What is the nature of narrowing of choice and subject uptake in the senior phase of CfE?
2. What is the nature of narrowing of subject content and pedagogical approaches experienced by students in the senior phase of CfE?
3. What are the drivers of curriculum narrowing within the senior phase of CfE?
4. What are the effects of curricular narrowing on students’ attainment in the senior phase?

This paper is concerned with the first phase of this research, and partially addresses these research questions. Scott’s report makes some strong claims about the nature and extent of curriculum narrowing in Scotland, but is open to challenge methodologically (for example it does not appear to account for differences in cohort size in its analysis of the data). Our twin goals in this paper are thus to update Scott’s (2015) research and to apply a more nuanced set of instruments to the data than was the case in the earlier research. Through this analysis, we aim to assess whether the claims made in the media and by the existing research are indeed valid, and whether we are in fact seeing a major narrowing of the curriculum in Scotland, contrary to the espoused goals of Curriculum for Excellence. In the sections that follow, we first provide an overview of the context, including providing a more detailed overview of Scott’s findings. We then outline our own approach to analysing these data, and present our own findings.

Background and context

According to Scott, the development of school-based provision for National Qualifications was an unintended consequence of systemic issues surrounding qualifications reform.

The result of curricular change, particularly in schools pursuing a 6-column S4 curriculum (circa 150 schools) or a 5-column S4 curriculum (15-20 schools), is curricular narrowing and significant curricular distortion, with some curricular areas subject to significant reduction in enrolment. A reduction to 6 S4 courses was never a planned aspect of Curriculum for Excellence but is an expedient measure resulting from some schools’/authorities’ interpretation of what is now possible within time constraints. (Scott, 2015, p.1)

In order to fully understand these issues, it is necessary to provide some background to the reforms and their effects. Prior to 2013, students in the final stage of compulsory education typically undertook courses that ran over 2 years, in up to 8 subjects. These courses comprised 160 hours of study, broken down into ‘120 hours’ teaching and learning and 40 hours for other activities such as assessment, reinforcement and remediation’ (ibid., p.3). According to Scott, ‘although o[ld]NQs were designed to be carried out by senior pupils in one year as part of a five-course programme of study, they were also widely employed in S3/4 over two years as part of an eight course programme, thus providing each S3/4 course with significantly more time than intended by SQA’ (ibid., p.3).

This situation was further complicated by the existence of a twin track for qualifications. Since the 1980s, the majority of schools enrolled S3/4 students into Standard Grade qualifications, at levels 3

(Access), 4 (General) and 5 (Credit). Typically students were enrolled for dual entry (either Access/General or General Credit). Statistics from the Scottish Qualifications Authority do not reflect this dual enrolment, instead showing the qualification for which the student eventually received accreditation (for example, if a student was registered for General and Credit, but failed Credit and passed General, then the enrolment statistic would show General only). This form of tiering provided a safety net for borderline students who had given the opportunity to try for the higher level, in case they failed. The 1994 Higher Still programme created a separate pathway for National Qualifications, establishing Intermediate courses. Intermediate 1 was equivalent to Standard Grade General (SCQF level 4), and Intermediate 2 was equivalent to Standard Grade Credit (level 5). Some schools replaced Standard Grade courses with these new qualifications, but others engaged in a practice which was more dubious, and often driven by a need, within performative cultures of education driven by high levels of accountability, to manipulate attainment statistics. Hence, a commonplace practice emerged, whereby students with Standard Grade Credit qualifications would start Higher courses, and then (if their attainment was poor in unit tests) were subsequently demoted into Intermediate 2 (SCQF level 5) courses, despite already being qualified at level 5 (Standard Grade Credit). For example, figures provided by SQA for 2009, indicate that 14,035 students achieved Intermediate 2 qualifications (including 5,756 in English and 1,253 in Maths), having already achieved a Credit pass (level 5) in Standard Grade in the same subject (for an overview of the history of qualifications in Scotland, see: SQA, 2008).

Following the implementation of qualifications reform in 2013-14³, this dual pathway disappeared, along with the opportunities that it offered for 'gaming the system'. In its place, we see a single pathway, with newly structured National Qualifications at level 4 and 5. Access level 3 and Higher level 6 qualifications remained relatively unchanged. Several features of these new qualifications are worthy of note here:

- The new National 5 qualification comprised both unit accreditation through coursework and tests, and a terminal examination. In contradistinction to this, the new National 4 qualification lacked an examination. This difference has arguably undermined the credibility of National 4, and has been claimed to be responsible for a decline in enrolment (BBC, 2017; Herald, 2017).
- The unit tests that are a fundamental part of these qualifications have been controversial; anecdotal evidence has suggested considerable over-testing, with concomitant demands on teachers (bureaucracy and workload) and students (high levels of stress). The Scottish government responded in 2017 by abolishing the requirement to run unit tests, but this has created further difficulties, as many teachers have bemoaned the removal of a safety net for borderline students (NASUWT, 2016; TES, 2017); while the dual enrolment of the previous system is no longer possible, due to differences in content, it has been possible for students failing the National 5 examination to gain some accreditation for units passed during the year, or even to re-present this subsequently for accreditation at National 4.
- The new qualifications continued to be designed as 160 hour courses, but are now run over a single year. This has created considerable difficulties for schools, as it is no longer feasible to fit in 8 courses within the allotted time-span, and has led to a diversity of practices in terms of provision. In particular, this has been blamed for the curricular narrowing described in the introduction of this paper. According to Scott (2015), 5 models of provision emerged:
 - Schools keeping 8 subjects in S4, mainly through the artifice of teaching a part of the course in S3 (circa 50 schools⁴)
 - Schools reducing to 7 subjects in S4, again with some timetabling creativity (circa 100 schools)
 - Schools reducing to 6 subjects in S4 (circa 150 schools)
 - Schools reducing to 5 subjects in S4 (circa 20 schools)

- A very small number of schools have sought more creative solutions, for example the development of an integrated senior phase of S4-6, which abandons the notion of a ladder of qualifications to be climbed in sequence, mixing and matching qualifications at levels 3-7, and theoretically making it possible for students to pick up Higher qualifications in S4. This model would typically comprise 5-5-5 subjects or 6-6-6 subjects over s4-6).

This somewhat muddled situation has been accompanied by general perceptions about lack of clarity within national guidance on the Senior Phase and the form of the Broad General Education which precedes it, as well as perceived declines in system (e.g. Local Authority) capacity to support curriculum development (Brown, 2014; Scott, 2015).

So what is the general picture in relation to enrolment in National Qualifications? And what specifically is being claimed in relation to curriculum narrowing? Table one⁵ provides an overview of enrolment trends for SCQF levels 3-5 over the period 2013 (the final year of the old qualifications) and 2017. These broadly indicate, as found by Scott in 2015, that enrolment has fallen in global terms since the introduction of the new National Qualifications. Scott states that 'overall SCQF level 3-5 enrolment has dropped by 17% from 2012-13 to 2014-15. Two-thirds of this occurred in 2013-14 with a further drop in 2014-15' (ibid., p.8). As the 2016-17 figures show, this decline has continued to some extent in the intervening period. However, some caution is necessary here, and a number of caveats need to be stated.

	2013	2014	2015	2016	2017
N3	64,609	27,526	20,608	18,475	17,114
N4	183,591	141,395	132,429	122,961	116,032
N5	296,203	310,717	298,694	295,083	292,220
Total	544403	479638	451731	437519	425366

Table 1: Overview of enrolment in National 3, 4 and 5 qualifications (Sources – Scott [2013-15]; SQA, <http://www.sqa.org.uk/sqa/80699.html> [2016-17])

- These figures do not adjust for variations in cohort size, and this needs to be factored in.
- Moreover the figures have also reduced post-2013 because of the disappearance of the twin track Standard Grade/Intermediate system. As previously explained, thousands of students each year prior to 2013 would repeat level 5 qualifications, and following the introduction of the new qualifications, this practice was no longer possible.
- The decline in enrolment might be a part of a trend started long before the introduction of CfE.
- The declines in enrolment for level 4 qualifications may be due to the previously mentioned loss of credibility for the new National 4 qualification. There is substantial anecdotal evidence suggesting that the great majority of enrolments are at level 5 by default; students who fail are subsequently given the choice of re-presenting elements of level 5 work for level 4 accreditation, making up gaps where necessary, and achieving a level 4 pass within a few months. (Nb. This largely accounts for the decline in level 4 enrolments between 2016 and 2017; the overall figure will subsequently increase within a few months as students are awarded their qualification following re-presentation.) High enrolment at level 5 appears (again anecdotally) to be at least in part due to schools gaming the system to present a positive picture of attainment in unit tests at National 5.

Nevertheless, despite these caveats, common-sense would suggest that a wholesale reduction of the range of subjects available for study will also reduce the number of enrolments overall, and we would share Scott's concerns about a narrowing of the curriculum at this crucial stage in compulsory education.

Scott also points to a decline in attainment (stated as passes at A-C or equivalent as a proportion of enrolments and in comparison with other cohorts). His figures (ibid., p.9) for level 5 qualifications suggest a fall between 2013 and 2015, expressed as the proportion of enrolments gaining A-C passes, as follows: 2013 – 91.3%; 2014 – 80.1%; 2015 – 79.6%. Subsequent data (<http://www.sqa.org.uk/sqa/80699.html>) suggest a continuation of these trends: 2016 – 79.4%; 2017 – 79.5%. These figures might be interpreted as a drop in attainment, following the introduction of new qualifications, and due to teachers' lack of familiarity with the new systems and subject to change over time, as teachers become more adept at teaching to new tests. The stability of these figures since 2014 casts doubt on this hypothesis. Conversely, such trends may be subject to one or more of the caveats noted above, especially those relating to dual enrolment and pressures to enrol students at a higher level than merited by their previous attainment. Moreover, according to Scott, the ubiquitous practice of enrolling students for two levels under the former system (e.g. Standard Grade Credit and General) may have masked higher levels of failure previously; as students were only recorded as enrolling for the level at which they passed, 'the ability of pupils to sit examinations at two levels meant that the actual failure rate at the higher level was disguised by pupils' ability to pass at the lower, especially since recent government/SQA statistics unhelpfully tend to conflate all three levels of S Grade pass' (ibid., p10). Further research is needed to explore these phenomena.

The above analysis suggests that the CfE reform of qualifications has reduced the range of subjects taken by students in the first phase of the senior, qualifications phase in Scotland, and a concomitant drop in attainment expressed as the proportion of student passing with grades A-C in comparison with pre-CfE qualifications. A further question relates to the impact on uptake of particular subjects. Again, Scott's analysis suggests that there have been significant impacts. He points to the relatively stable rates of enrolment in the core 'important' subjects English and Maths, and steep declines in enrolment for language qualifications. For example, he indicates the following declines in level 5 enrolment between 2013 and 2015: French – 13,574, down to 9611; and German – 2921, down to 2364. Again, these figures should be treated with caution, and need to be set against changes in cohort size, and long term trends in enrolment.

The remainder of this paper addresses the above issues, through our own analysis of publicly available data. In the sections that follow, we examine sets of trends in National Qualifications, and in doing so submit Scott's analysis to critical scrutiny. The first of these trends relates to enrolment patterns, and the second to attainment patterns over the period in which the new National Qualifications were introduced. Our analysis takes into account attainment trends by Local Authority deprivation decile, which relates to current policy concerns about closing the attainment gap between those from advantaged and disadvantaged backgrounds. We examine data for the period 2011 to 2015, providing analysis of 3 cohorts for the former qualifications, and 2 cohorts for the new ones.

Methodology

In this study we used two data sources to construct the datasets that were used in the analysis. The first data source is the SQA attainment statistics data for years 2009-2016/17 (<https://www.sqa.org.uk/sqa/48269.8311.html>). The SQA attainment statistics provide information for pupils on:

1. The number of entries of pupils at SCQF levels 3 to 7 for every subject and overall.
2. The number of pupils entered every subject on different levels of the SCQF.

3. The number of passes (i.e. number of pupils achieving grades A* to C) for every subject and overall on different levels of the SCQF.

The second data source is the Scottish Government data on the attainment of school leavers for years 2010/11- to 2014/2015 (<http://www.gov.scot/Topics/Statistics/Browse/School-Education/leavedestla>). The Scottish Government obtains the attainment data from the SQA and reports on the attainment and transitions of school leavers in Scotland. The information on the attainment of the Scottish school Leavers is reported at the Local Authorities' level.

The data from each data source were augmented to create time series data for the considered time period. The information about the average number of subjects offered in different local authorities was derived from Scott (ibid.) and added to the attainment data.

The information about the Scottish Index of Multiple Deprivation (SIMD) was obtained from the Scottish Government official statistics (<http://www.gov.scot/Topics/Statistics/SIMD>) and added to the attainment data.

The time series data was analysed using descriptive statistics techniques for data analysis, such as frequencies tables, cross-tabulations and their graphical representation and correlation analysis using the SPSS statistical software.

Findings

Our first set of findings relates to the phenomenon of curriculum narrowing. It is important to note here that while changes to provision in relation to the introduction of new National Qualifications are a major factor, other factors (for example teacher shortages) may be at play here. More research is needed to explore these issues. We have identified three sets of issues that are pertinent in this analysis:

1. *A decline in the range of subjects being chosen by students.* We note here that this is not necessarily the same as the total range of subjects available to choose from in particular schools, but instead relates to the maximum range available to a particular student to take at a given time, as outlined on page 3 above (i.e. 5, 6, 7 or 8).
2. *Enrolment patterns in particular subjects.* A particular issue here is the extent to which there has been a decline in non-core subjects in the face of reduced choice in school year S4.
3. *Subsequent enrolment patterns in school years S5 and S6.* This relates to claims that curriculum narrowing in the post-compulsory years of the senior phase is a result of narrowing in the previous year.

Our second set of findings concerns attainment patterns. Scott (ibid.) has claimed declines in attainment, both in terms of the proportion of students gaining passes in relation to overall enrolment, and in terms of the absolute numbers of students gaining qualifications. We examine two dimensions of this issue:

1. *Attainment across qualifications at particular levels.* For example, we analyse whether there are higher proportions of students gaining level 5 or level 6 qualifications than previously.
2. *The levels of attainment gained by students leaving school.* Here, we are interested in trends in attainment according to levels of social deprivation.

Curriculum narrowing

Charts 1.1-1.3 show trends in the number of entries at SCQF level 5.5. The trends for SCQF 4 are similar. It illustrates that, after 2013, there is a decrease in the number of entries on SCQF levels 4 and 5 of pupils with 7 and 8 subjects. This clearly supports the notion, espoused by Scott and others, that the curriculum has narrowed following the introduction of new National Qualifications. On

average in 2016 there were 3.7 entries per student at SCQF 5 level compared with the average 5.8 entries per student in 2013.

Chart 1.1 Trends in number of entries to National 5 courses

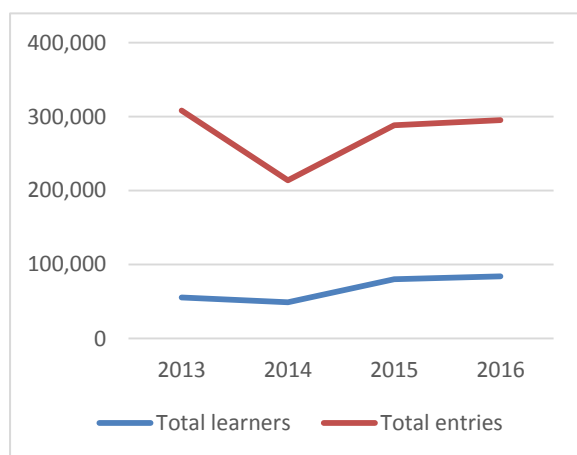


Chart 1.2 Average number of entries to National 5 courses per student.

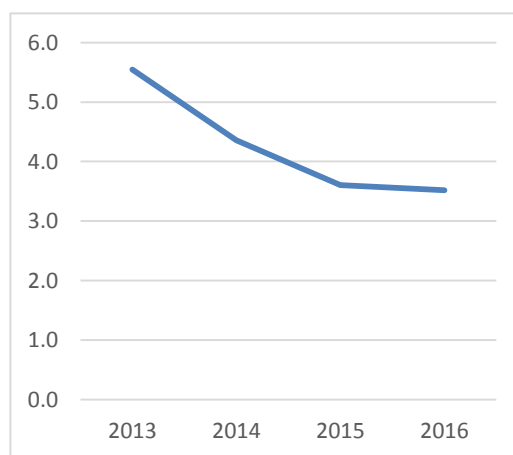
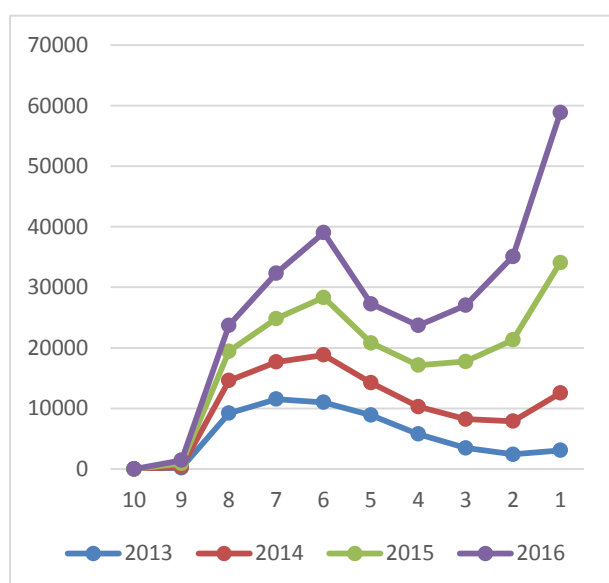


Chart 1.3 Trends in number of entries to National 5 courses per student



The picture becomes considerably less clear when we start to analyse data relating to uptake of specific subjects. Much of the commentary has followed the common-sense view that fewer available subjects are leading to students having fewer choices; once the important subjects – Mathematics, English and Science – have been selected, then there is only limited space to fit in the rest, and thus there is an inevitable decline in the uptake of languages and arts. Scott's (ibid.) analysis supports these trends, especially in relation to language courses.

Chart 2.1. Trends in number of entries for Standard Grades/National 5 courses, per grouped subject.

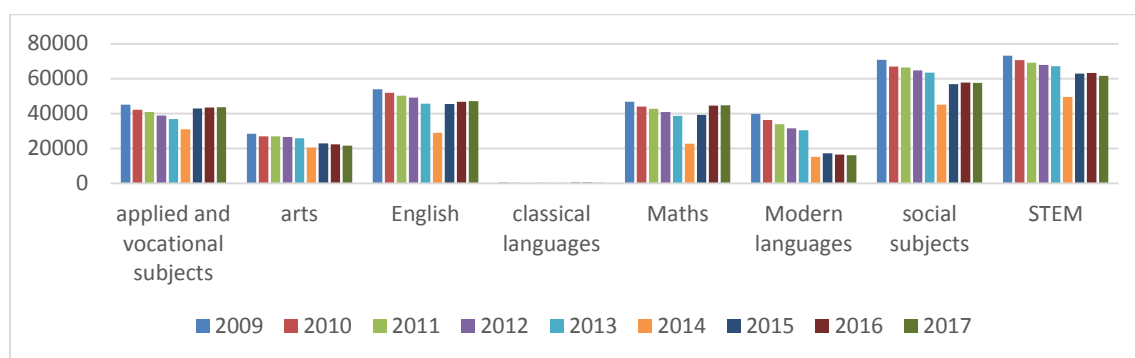


Chart 2.2. Trends in number of entries for Standard Grades/National 5 courses, per grouped subject, including entries to Intermediate 2 courses in 2014 and 2015.

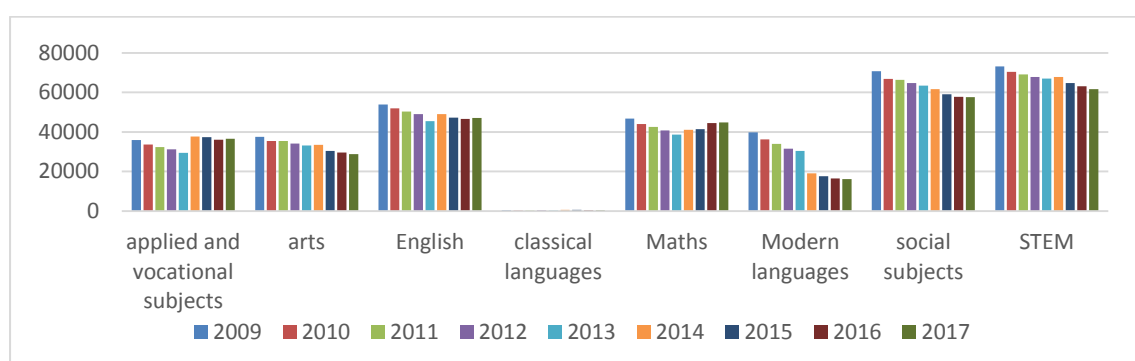
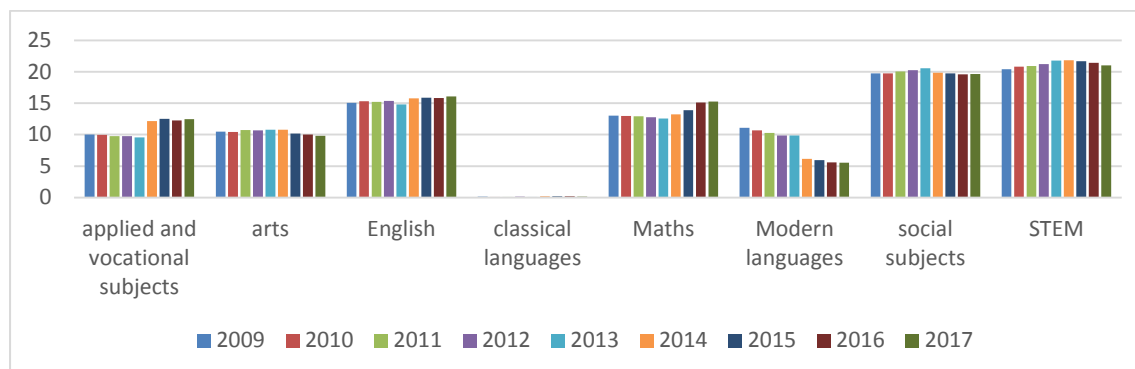


Chart 2.3. Trends in the percentage (of total number of entries) of entries to Standard Grades/National 5 courses (including entries to Intermediate 2 subjects in 2014 and 2015), per grouped subject.



We first examined the trends in number of entries to subjects at Standard Grade/National 5 levels (Chart 2.1). These trends indeed show, in line with Scott's analysis, a sharp decline in the uptake of almost every subject group between 2013 and 2014. Yet, in 2015 the numbers of entries bounced back to the 2013 level for Maths and English or even exceeded the 2013 level for applied/vocational subjects (see Appendix 1 for subject classifications). However, in 2015 the number of entries for STEM (excluding Maths) subjects, arts, modern languages and social subjects, although increased compared to 2013 levels, still remained lower (and in case of arts and modern languages significantly lower) than in 2013.

Prior to attributing this decline to the curriculum changes alone, however, one should remember a number of important caveats. First, the information on entries before 2014 is provided as a total number of entries to all subjects at Standard Grade level qualifications⁶, which include Standard Grade Foundation (corresponding to the SCQF National 3 level), Standard Grade General (corresponding to the SCQF National 4 level), and Standard Grade Credit (corresponding to the SCQF National 5 level) (<https://www.sqa.org.uk/sqa/>). In Appendix 2, we show how the number of entries inflate if we combine entries to qualifications at SCQF level 3, SCQF level 4 and SCQF level 5 for years 2014-2016. Since pre-2014 figures on entries combine number of entries at three SCQF levels, comparisons between entries at SCQF levels 3 to 5 before and after 2014 are not easy to carry out and any observed drop in numbers should be treated with caution.

Furthermore, in 2014 (and also to a smaller degree in 2015) S4 students were still entering courses at Intermediate levels in addition to new SCQF National levels. In particular 2014 while there were about 213,000 entries at National 5 level, there were also about 97,000 entries at Intermediate 2 level⁷ courses.

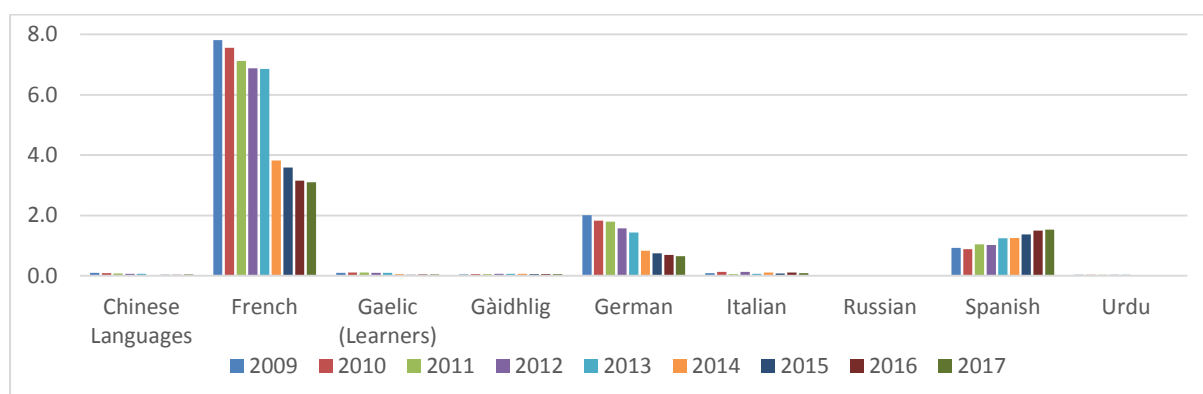
Indeed, adding together the entries at National 5 and Intermediate 2 levels for years 2014 and 2015 completely eliminated the sharp drop in the number of entries in 2014 (Chart 2.2) that we observed in Chart 2.1. As Chart 2.2 demonstrates, for almost all subjects/subject groups there was either no decline in the number of entries between 2013 and 2014 (English, Maths, STE(-M)⁸, Arts) or a small decline (Social subjects) that continued the pre-existing trend. However from 2015 onwards Social subjects, Arts and STE(-M) subjects saw a decline in number of entries for Standard Grades/National 5 courses, per grouped subject, including entries to Intermediate 2 courses in 2014 and 2015.

Modern languages was the only subject group for which the number of entries (both at National 5 and combined entries at Intermediate 2 and National 5 levels) dropped considerably between 2013 and 2014, and continued declined in the following years (Charts 2.1 and 2.2). At the same time, the trend of reduction in the numbers of entries in Modern languages subjects existed prior to 2014 and the decline was the fastest among all subject groups. A closer look at the data year by year reveals some interesting patterns. Chart 3 presents trends in proportion of intake in Modern language courses (at Standard Grades/National 5 courses, including entries to Intermediate 2 subjects in 2014 and 2015). It shows that the major part of the decline in the enrolment between 2013 and 2014 was due to an almost twofold drop in the proportion of entries in French. There was a decrease in entries in German too, but at the same time there was a corresponding increase in entries in Spanish. The data also suggests that the intake in Modern Language courses stabilised around 2015-2016 (see chart 3) .

The trends presented on Chart 2.1 and Chart 2.2 neither control for the changes in the configuration and number of subjects offered to pupils. Therefore, it would be better to examine not the numbers of entries in a particular subject, but to consider enrolment in a subject/subject group as a proportion of total enrolment (see Chart 2.3). This way, both the number and the configuration of subjects offered in a particular year are being controlled for.

The trends in percentages of entries suggest somehow a different picture from the one obtained through examining the trends in the number of entries. Chart 2.3 shows trends that are different from those presented on Chart 2.1 and Chart 2.2 that suggest that the picture of decline in some subjects is only partially correct. It shows the relative size of entries in most subject groups increased (Maths and English) or remained more or less the same (STE(-M)), or decreased only slightly (Arts and Social subjects) since 2013. Yet, our analysis supports the view that there has been a decline in the uptake of Modern languages subjects (see charts 2.1 and 2.2), as a proportion of total subject enrolment and as in terms of the number of entries. This, together with an evidence of a small decline in the intake of Art subjects and Social subjects offers some support to the notion that the new provision has put pressure on enrolment in non-core subjects, although the intake of applied/vocational subjects increased both in terms of total subject enrolment and as in terms of the number of entries.

Chart 3 Trends in proportion of enrolment to Standard Grades/National 5 courses (including entries to Intermediate 2 subjects in 2014 and 2015) in modern languages courses.

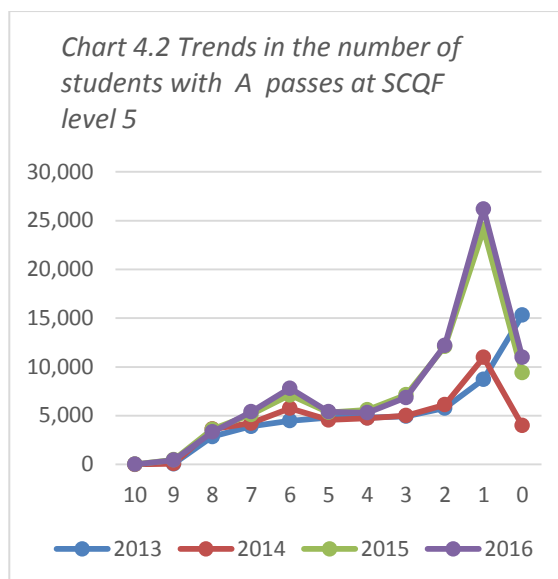
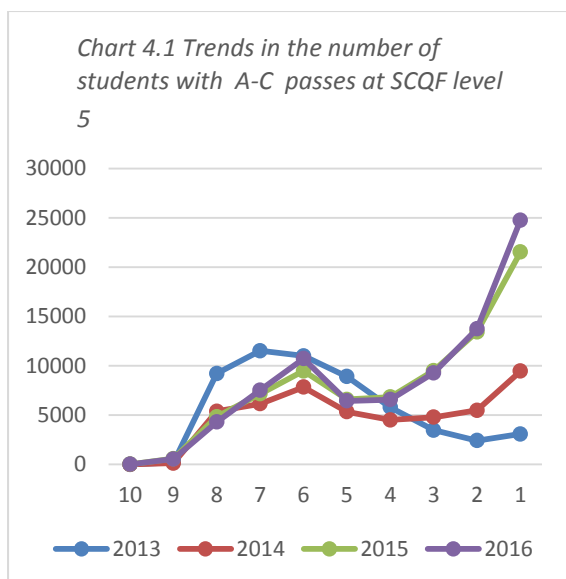


This renders problematic the strong assertions made in recent years, that the new Qualifications have affected enrolment in non-core courses. This situation emphasises the need for caution in interpreting figures. First, there are technical difficulties to link between the old and new qualification systems and the ways entries at the different levels of qualifications were recorded and reported before 2014 and from 2014 and onwards. Second, it is important not to draw conclusions from a single year's variations but consider long term patterns in enrolment, that show a different trend. Third, the analysis of trends in enrolment needs to be adjusted for changing numbers and configurations of subjects offered to students. Although the range and number of subjects within each of eight major subject groups might have changed, it seems that with the only one exception of Modern languages (and more specifically, French) the proportion of entries in each of the subject groups did not change considerably but remained relatively stable over time, with a small proportional increase in the intake in Maths and English and vocational subjects, and a small proportional decrease in the intake in Arts and Social subjects.

Attainment

As we previously discussed, it has been claimed that attainment has fallen since the introduction of new National Qualifications, both in terms of the proportion of students gaining passes in relation to overall enrolment, and in terms of the absolute numbers of students gaining qualifications. In relation to the first trend, Scott (ibid., p9) has noted, for example that the proportion of level 5 enrolments converted to passes has declined from 91.8% in 2012-13 to 84.1% in 2014-15. He further notes that this may be due to the changes in enrolment arrangements, whereby high failure rates previously at level 5 were masked by the practice of dual enrolment. This seems like a plausible explanation, therefore it is necessary to look differently at the notion of attainment. In the following analysis, we look at two different trends, namely attainment patterns across particular SCQF levels and the levels of attainment gained by students on leaving schools. On both measures, there is evidence that attainment has risen over the period since the introduction of new National Qualifications, and, moreover, that this rise in attainment is particularly benefiting students from disadvantaged socio-economic backgrounds.

Charts 4.1 and 4.2 show trends in the number of A-C passes and A passes at SCQF level 5. They show that, in 2015 and 2016, more students than before were getting between one and four of these passes. Numbers of students with these passes on 6 subjects were similar to that numbers in 2013 (Chart 4.1). At the same time, in 2015 and 2016 the number of students getting A passes in 4, 5, 6 or 7 subjects increased (Chart 4.2).



Charts 5 and 6 were obtained from the analysis of attainment data at the subject level. They present the numbers (Charts 5.1 and 5.2), and percentages of students with passes at National 4 level and the average percentage of students with A-C passes at National 5 level, per groups of subjects, expressed as the proportion (a) of total subject group entries (Charts 6.1 and 6.2) and (b) total number of entries (Charts 6.3 and 6.4).

The trends presented in Charts 5.1 and 5.2 show that numbers of students with passes at National 4 decreased for every subject groups during the period 2014-2016. Yet there was an increase in the number of students with passes at National 5 for all subjects except Arts and Modern languages over the same period of time. However, it should be noted that the sharp rise in number of passes between 2014 and 2015 might be due to excluding in 2014 a very considerable number of entries (and consequently passes) at Intermediate 2 level from the National 5 statistics (see Chart 2.2). If we disregard the sharp increase in number of passes between 2014 and 2015 passes at National 5 level, we could see that there was an increase in the number of passes for Maths and English over the period 2015-2017, while numbers of passes for other subjects remained very similar (applied and vocational subjects, arts and modern languages) or decreased only slightly (science and technological subjects and social subjects).

Examining trends in passes expressed as proportion of subject enrolment allows controlling for the changing numbers of subject entries and for the narrowing of the Curriculum, which we discussed in the previous section (Charts 6.1 and 6.2). At the SCQF level 4 trends in passes, expressed as a proportion of subject group enrolling show small decline in level of attainment between 2014-2017 for all subjects but social subjects and classical languages. The largest decline in level of attainment was found for STEM subjects (Maths excluded) – 5%; applied of vocational subjects – 5% and English – 4%. The level of attainment improved for classical languages, and remained overall unchanged for social subjects.

At SCQF level 5, attainment in Maths dropped between 2014 and 2015 from 62% to 47%, but then started to rise again reaching 55% of passes in 2017. In such subjects as English, social subjects and Arts, attainment levels did not change much. Proportion of passes slightly increased in STEM (excluding Maths) subjects, and decreased in applied and vocational subjects. The most notable decline in attainment was in Classical languages, from about 90% in 2014 to 80% in 2017. The most notable improvement was in Modern languages attainment – here the percentage of A-C passes increased from 83% in 2014 to about 91% in 2015, and stabilised on this level⁹.

Examining trends in passes expressed as a proportion of total enrolment (Charts 6.3 and 6.4) allows controlling both for changing in enrolment and in configuration for subject choices, showing a 'weight' of passes in a particular subject group relatively to other subjects. At National 4 level the proportion of passes in Maths increased from 15% of all entries in 2014 to 24% of all entries in 2017. There was also a smaller increase in the overall proportion of passes in social subjects, relatively to total number of entries. All other subjects saw a decline in passes expressed as a proportion of total entries.

At National 5 level of qualifications, Maths and English saw an increase in passes expressed as a proportion of total enrolment. A share of students with passes in STEM (maths excluded) subjects, and also in applied and vocational subjects decreased only slightly or remained unchanged. There was a modest decline in the share of students with passes in Arts, Modern languages and social subjects between 2014-2016/17, mirroring a decline in enrolment in these subjects that took place over the same period (see Chart 2.3). The trends presented in Charts 6.4 mirror the narrowing of the curriculum with an increasing (or unchanging) proportion of students passing core subjects (but also applied/vocational subject) at National 5 level and declining proportion of students passing non-core subjects such as arts, social studies and modern languages at this level of qualifications.

Chart5.1 Number of students with passes in subjects at SCQF level 4¹⁰

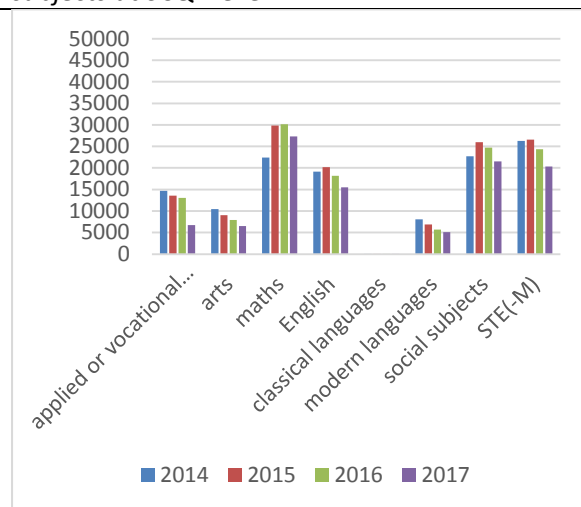


Chart5.2 Number of students with A-C passes in subjects at SCQF level 5¹¹

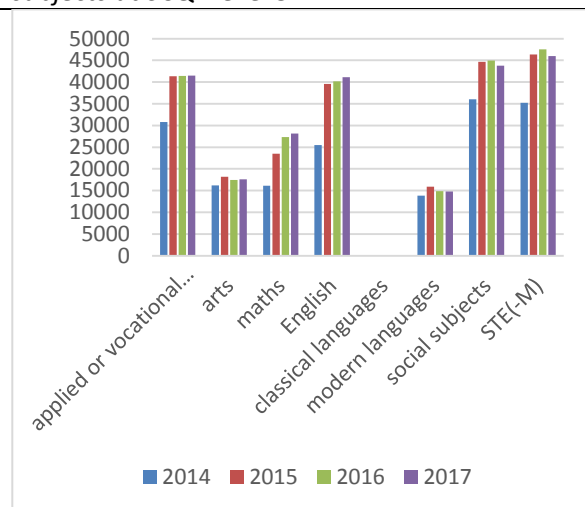


Chart6.1 Proportion of students with passes in subjects at SCQF level 4 (per subject entries)

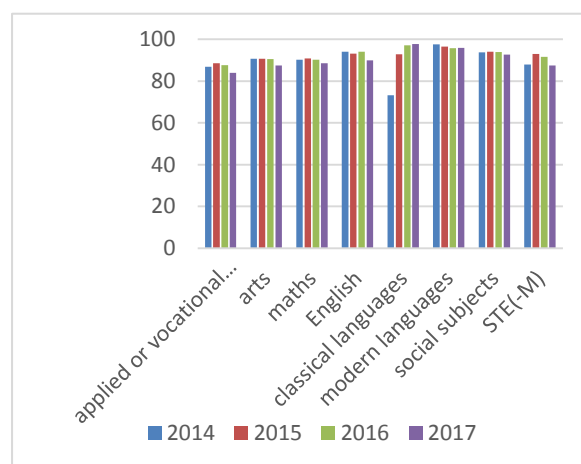


Chart6.2 Proportion of students with A-C passes in subjects at SCQF level 5 (per subject entries).

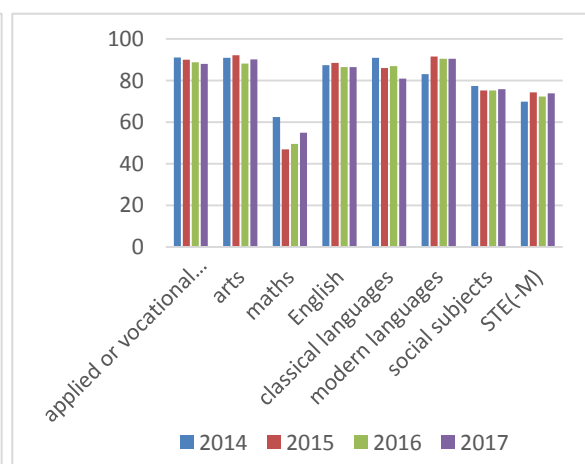


Chart 6.3 Proportion of students (of total number of entries) with passes in subjects at SCQF level 4

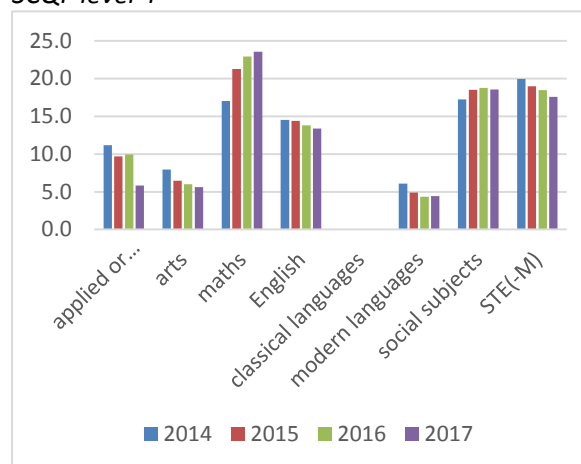
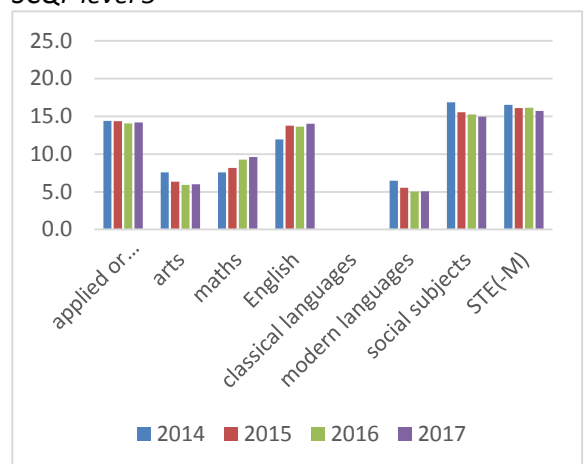


Chart 6.4 Proportion of students (of total number of entries) with passes in subjects at SCQF level 5



Trends in Attainment of School Leavers

Chart 7 presents the percentage of school leavers who obtained at least one pass at SCQF levels 3-7. The chart shows that, while the percentage of school leavers who left school with SCQF level 4 and SCQF level 5 qualifications decreased considerably, there was an increase in the percentage of those who leave school with at least one level 6 or level 7 qualification.

Chart 8 shows an increase in the percentage of school leavers who obtained four (on the left) and five (on the right) awards on the SCQF levels 4-6 over the period 2010/09-2015/16.

Chart 9 shows that the percentage of young people who leave school with SCQF level 5 as their highest qualification decreased in almost every local authority since 2013/14.

Chart 7: Percentage of leavers with a pass at SCQF level 3-7.

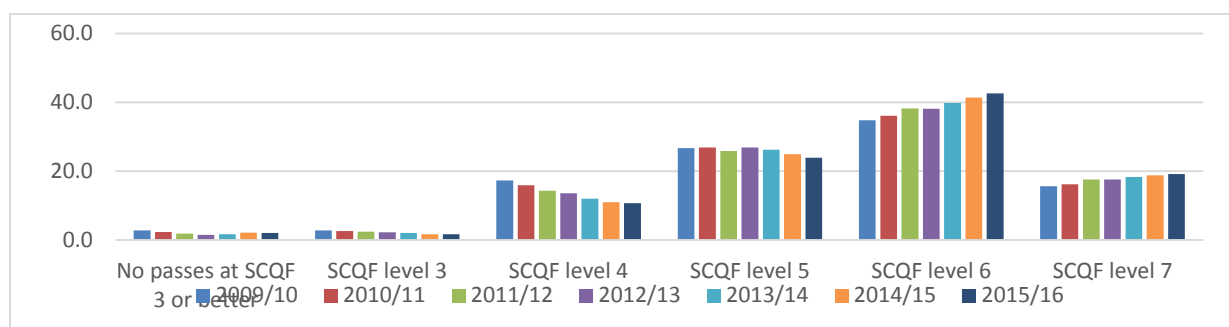


Chart 8. Leavers' attainment by SCQF level and number of awards achieved at that level or better.

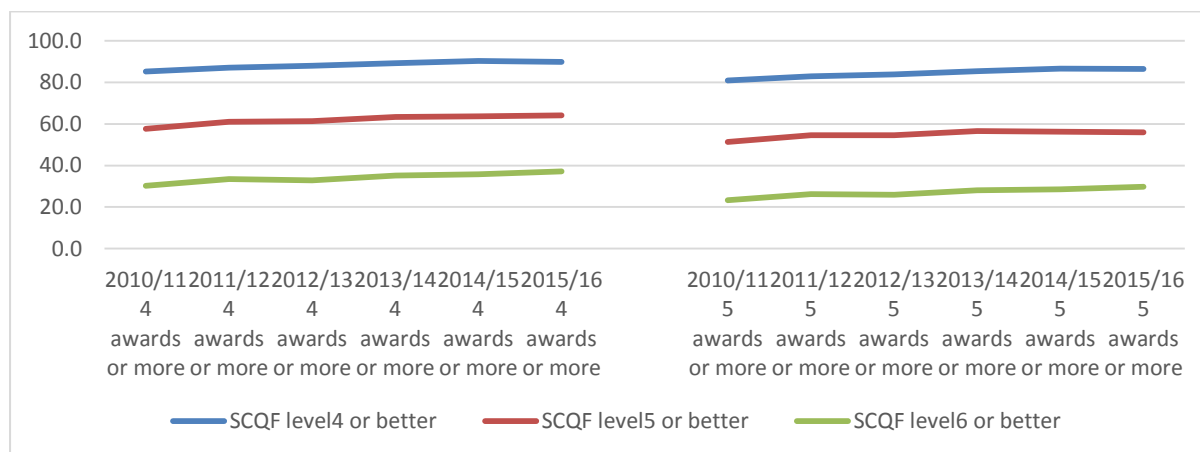


Chart 9. Percentage of school leavers by highest SCQF level, at which one or more passes were achieved at SCQF level 5, by local authority, 2009/10 to 2015/16.

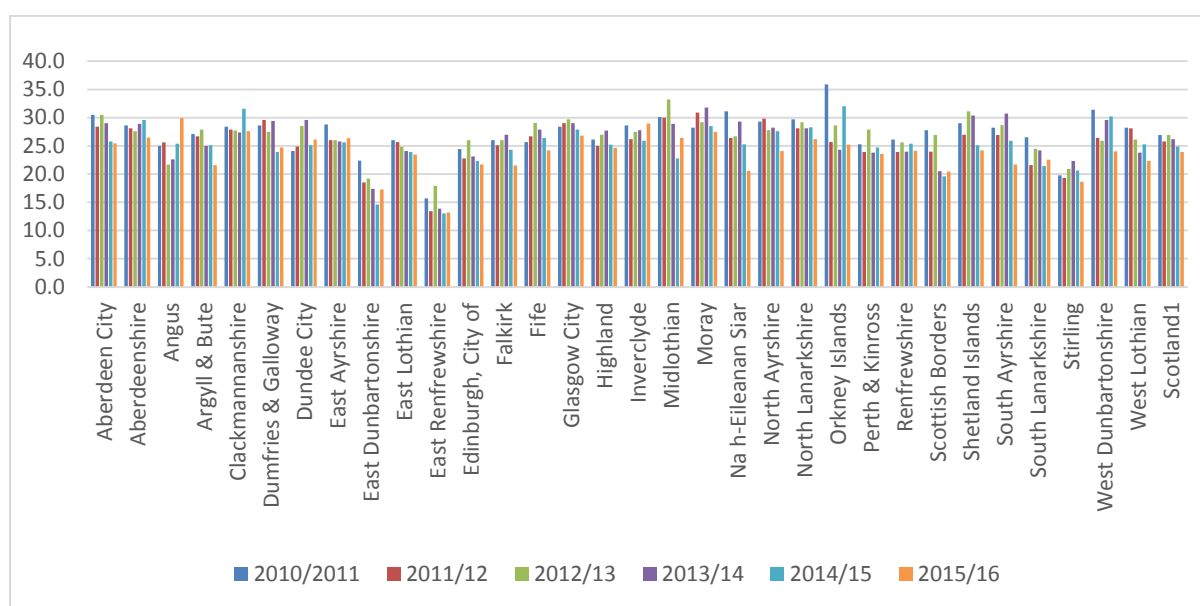
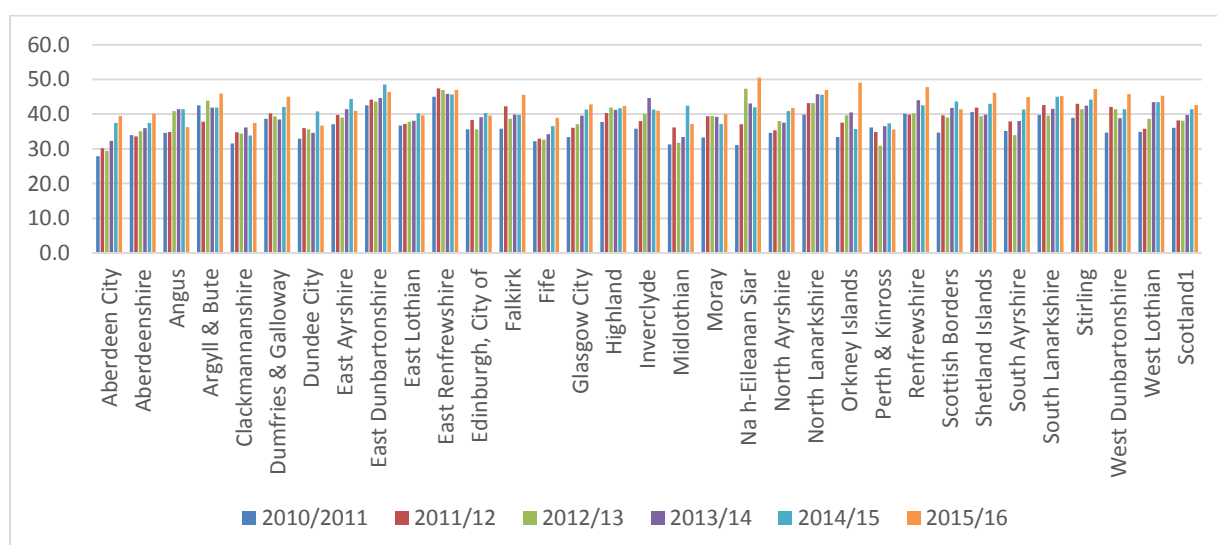


Chart 10. Percentage of school leavers by highest SCQF level at which on or more passes were achieved at SCQF level 6 by local authority, 2009/10 to 2015/16.



At the same time as Chart 10 illustrates that, since 2013/2014, the percentage of school leavers with SCQF level 6 as their highest qualification increased.

Chart 11 shows the percentage of school leavers who got at least one pass at SCQF level 5 (on the left) and Level 6 (on the right), by the Local Authority deprivation decile. The trends show that, with the exception of Local Authorities with the lowest level of deprivation, there was an increase in the percentages of school leavers who achieved at least one pass at SCQF level 6 between the years 2011-2016. The increase was particularly high in Local Authorities with highest level of deprivation. In relation to level 5, one can see that, in first five deciles of deprivation (higher level of deprivation), the percentage of one or more passes in at least one SCQF level 5 subjects remained unchanged,

while for Local Authorities with lower level of deprivation there was an increase in the percentage of school leavers with at least one pass at SCQF 5 level.

Chart 11. Percentage of school leavers by the highest SCQF level at which one or more passes were achieved, by SIMD decile, 2009/10 to 2015/16.

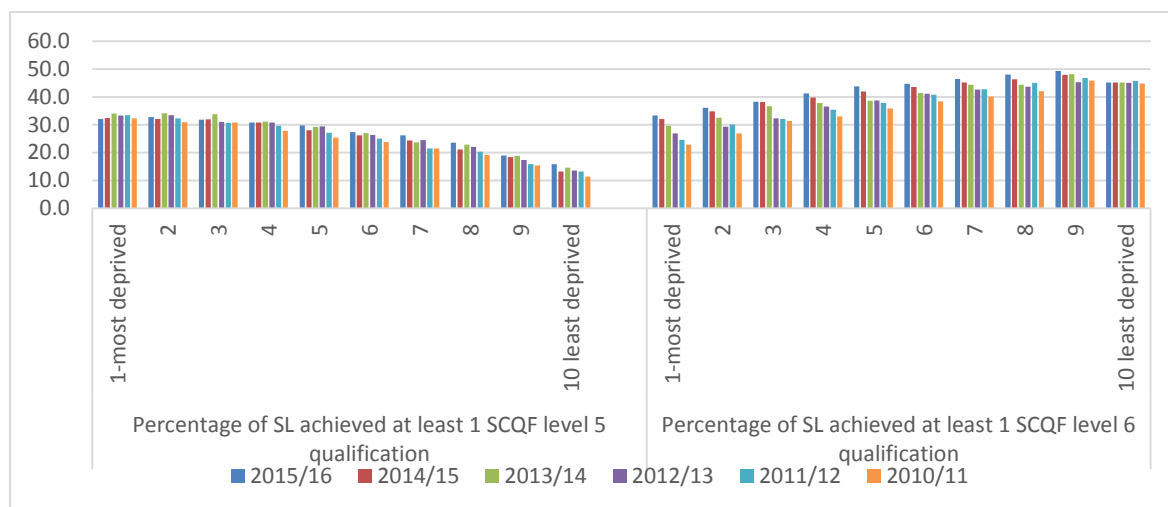


Chart 12: Percentage of school leavers with the highest level of the SCQF qualifications at least on one subject

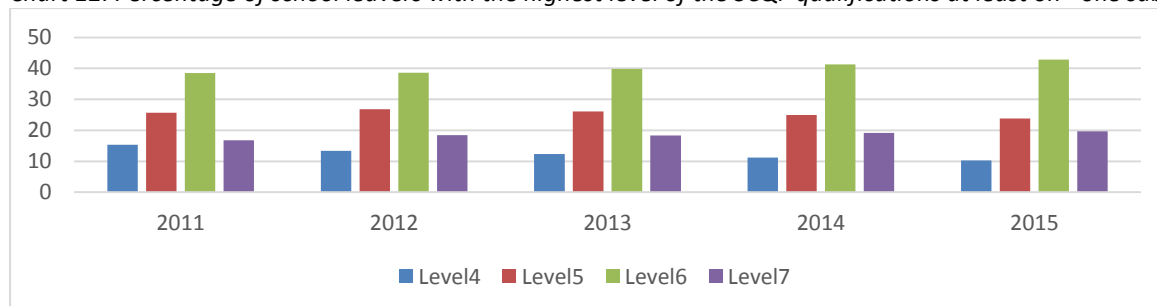
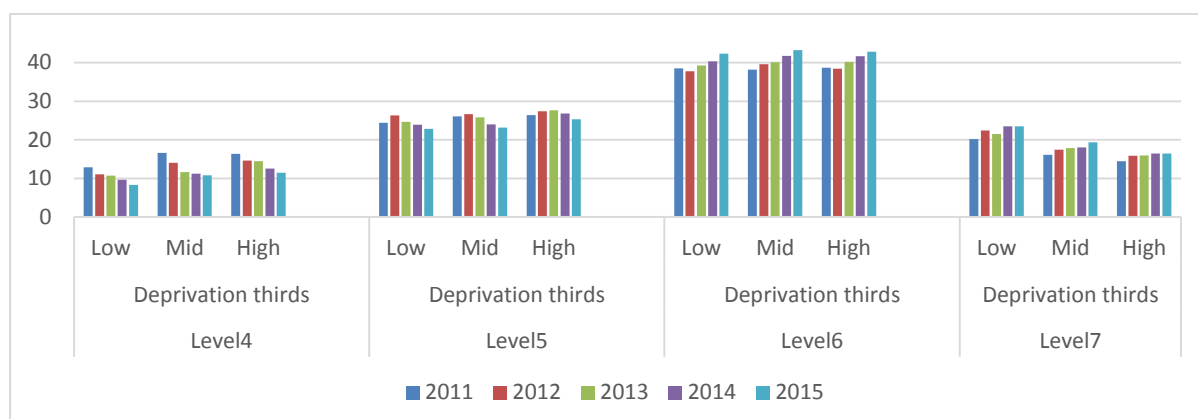


Chart 12 shows summary trends in the highest level of SCQF qualifications among the school leavers in Scotland. On average, since 2013/14 there was an increase in the percentage of school leavers with at least one SCQF level 6 qualification, a slight increase in the percentage of leavers with one or more SCQF level 7 qualifications, and a decrease in the percentage of school leavers with the highest level of educational qualifications at SCQF level 4 and 5.

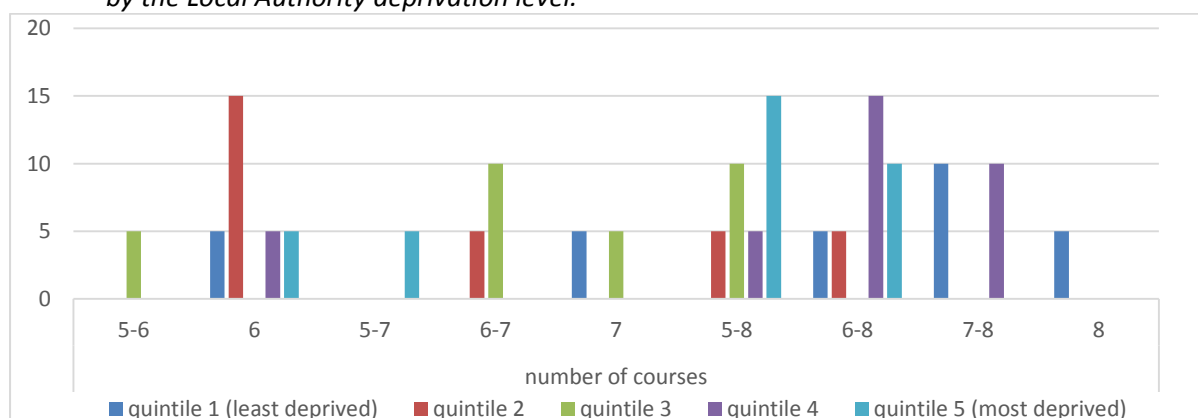
The percentage of school leavers achieving at least one level 6 SCQF qualification is rather constant across areas with low, intermediate and high levels of deprivation. Yet, the percentages of school leavers achieving the highest qualification(s) at SCQF level 4 or SCQF level 5 are higher in areas with higher levels of deprivation. At the same time, the percentages of school leavers who achieved highest qualification(s) at SCQF level 7 are higher in areas with lower level of deprivation (see Chart 13).

Chart 13. Percentage of the leavers who achieved at least one SCQF qualification on the correspondent level.



We estimated Pearson's correlation coefficients between the percentages of school leavers who achieved their highest qualifications on particular SCQF levels and the (standardised) deprivation score (higher values mean higher deprivation). Correlations between the deprivation score and the percentage of leavers who achieved their highest educational qualifications at SCQF level 6 are weak and not statistically significant. Correlations between the percentage of leavers who achieved at least one qualification at level 7 is negatively correlated with the level of deprivation. The percentages of school leavers who achieved their highest educational qualifications at SCQF levels 5 and 4 are positively correlated with deprivation. Finally, we considered the relationship between the level of deprivation of Local Authority and the number of subject choices offered in Local Authority schools in S3 and S4.

Chart 14. Number of local authorities with different numbers of subject choices in S3 and S4 by the Local Authority deprivation level.



None of the most deprived local authorities offer uniformly 8 subjects. Most frequently, the most deprived local authorities offer between 5-8 or between 6-8 subjects. All local authorities that uniformly offer 8 subjects in S3 and S4 are in the least deprived quintile of deprivation (see Chart 14).

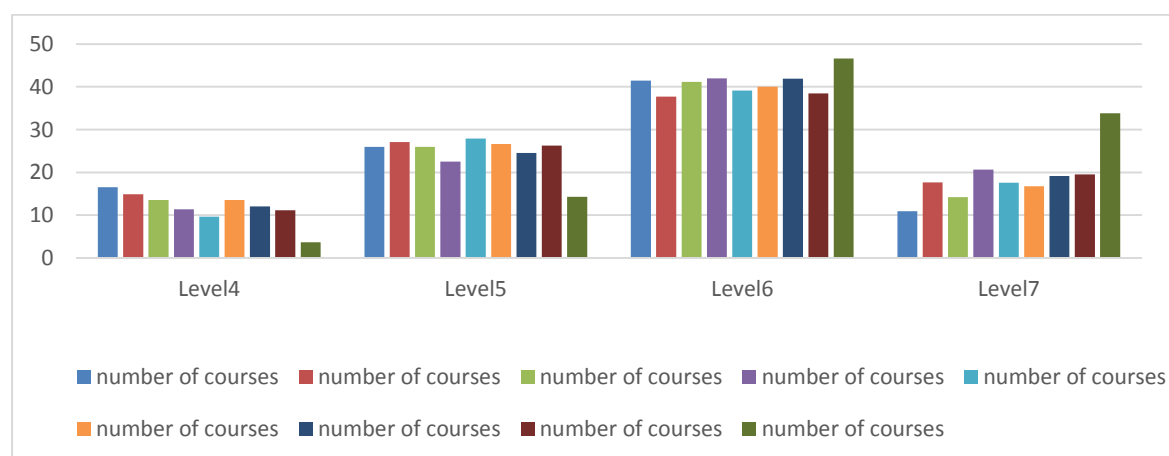
Number of subject choices and percentages of school leavers with qualifications at each level of the SCQF

The limited choice of subjects in S3 and S4 is often blamed for the falling attainment in Scottish secondary education system. Therefore we examined whether number of subjects offered in S3 and S4 (i.e. during the two last years of compulsory education) are associated with attainment at the post-compulsory level of education.

Our analysis shows that, at the level of Local Authorities, there is an association between the number of choices offered to students in S3 and S4 and the highest level of education qualifications of school leavers (Chart 15).

- The proportion of school leavers with SCQF level 4 qualifications is the highest in Local Authorities that offer either 5 or 6 course choices, and the lowest in the single LA that offers 8 subject choices.
- The proportion of school leavers with SCQF level 5 qualifications is the lowest in the single LA that offers 8 subject choices.
- We did not find significant variation in the proportion of school leavers with SCQF level 6 by the number of subject choices offered in local authorities.
- Yet, the proportion of school leavers with SCQF level 7 qualifications is almost twice as high in the LA that offers 8 subject choices, compared all other LAs.

Chart 15. Number of subject choices and percentages of school leavers with qualifications at different levels of SCQF.



Furthermore, many point out that a limited subject choice is related to the level of deprivation of school's local area and the school's local authority. This might be a part of the story, and the data presented in the previous section indicate that there may be such a relationship. This relationship needs to be explored further, using the data about the deprivation and attainment at the school/neighbourhood levels, rather at the local authority level.

Yet, there are additional factors that might affect the number of subjects offered in S3 and S4, such as a size of the school and an availability of subject teachers. These, and other relevant factors, should be examined in conjunction with the level of deprivation, in order to establish the relative role of each of these factors in determining the number of subject choices in schools and local authorities of different characteristics.

We examined the association between the number of subject choices and the school size (total number of students/ public school ratio at the local authority level). We found that the smaller subject choices in S3 and S4 (5-7) are offered in LAs where schools are on average small. In local authorities where on average the schools were of an intermediate size, no local authorities offer uniformly 5 subjects, but a few offer uniformly 6 subjects. In the latter LAs many schools had a mixed provision of subjects varies between 5-8 subjects. The LA that offers 8 subject choices has the biggest schools on average (Chart 16).

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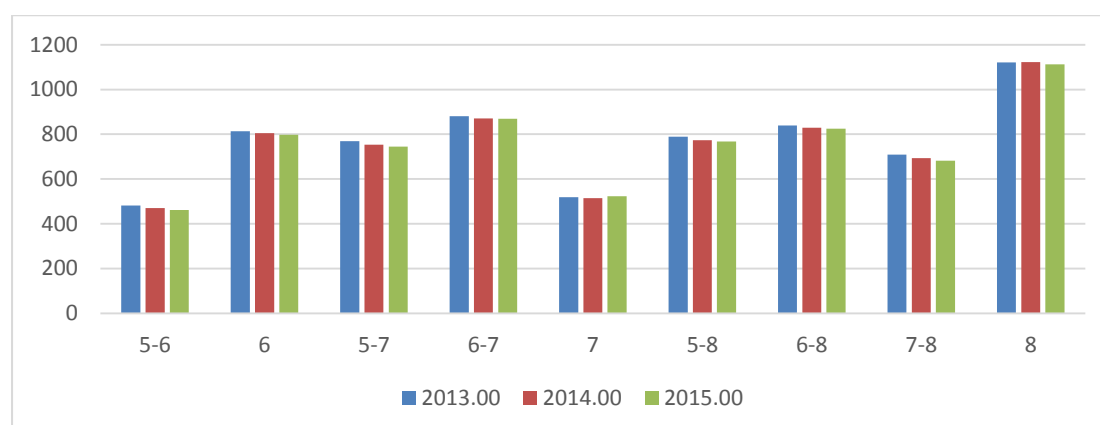


Chart 16. Number of subject choices in S3 and S4 but the average school size in LA.

Is curriculum narrowing in the post-compulsory years of the senior phases, related to its narrowing in the previous year?

There was an increase in the number of students in 2015 who entered SCQF Higher courses (the SQA entries and attainment data are available on 'Highers' and 'New Highers'¹²). The total number of entries in Higher subjects remained rather stable during the entire period. On average the number of entries per student dropped in 2015 (from 3 on average to 2 on average), but then bounced back in 2016.

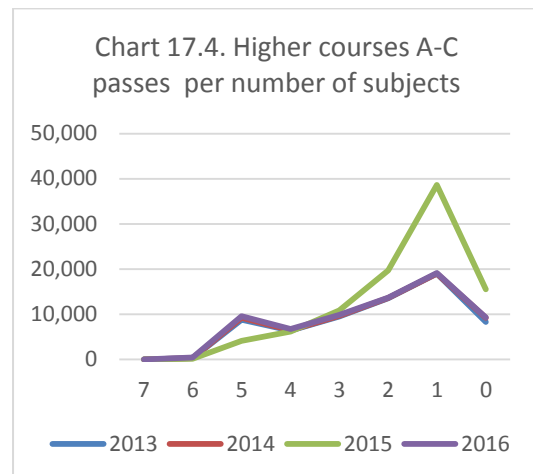
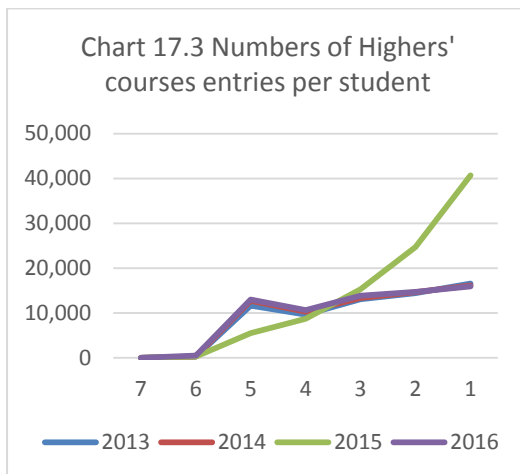
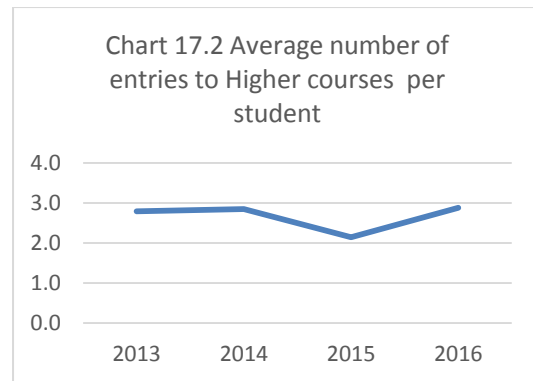
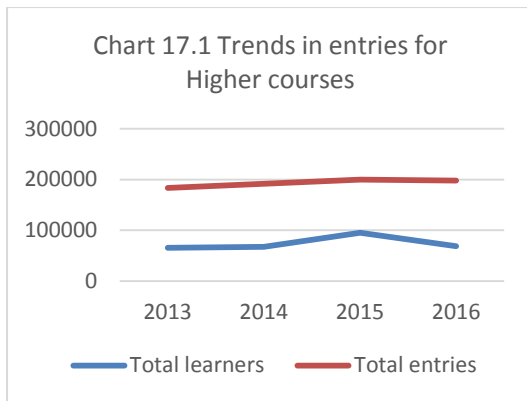
As Chart 17.3 shows, in 2015 students were less likely to enter 5 or more subjects than in any of the previous years. At the same time, they were more likely to enter just 1 or 2 Higher subjects than in any of the previous years. In 2016 the students were less likely to enter 3 or less Higher subjects and more likely to enter 5 or more higher subjects than in any of the previous years.

Chart 17.4 shows that in years 2015 and 2016, the relative number of students who received A-C passes in 1 to 3 Higher subjects increased compared with the previous years. The proportion of A-C passes in 4 subjects has not changed, compared to the 2013 and 2014. However, in 2015 there was very small proportion of students who received A-C passes in 5 or more Higher subjects. Yet, in 2016 considerably more students were achieving A-C passes in 5 or more subjects than in the previous years.

The proportions of students who received A passes in 3 or less Higher subjects increased in years 2015 and 2016. The proportion of students who received A passes in 4 Higher subjects did not change between 2013 and 2014, and 2015 and 2016.

In 2015 very small proportion of students (compared to any other year) received A passed in 5 or 6 Higher subjects. However, in 2016 the proportion of students who received 5 or 6 A passes in Highers was the highest compared to any other year.

Overall, we found that, although the trend of narrowing the curriculum exists for levels 4, 5 and 6 of the SCQF qualifications, attainment at SCQF level 6 does seem to be affected by this trend. Thus, in 2016 relatively more students were obtaining qualifications needed to gain an entry into higher education, compared to the previous years (2013-2015).



Conclusions

In line with previous research, we did find evidence that curriculum is becoming more narrow. This manifests as fewer subjects being taken in school year S4.

The data also show drops between 2014-2017 in the numbers of students achieving level 4 passes in every subjects. For National 5 level qualifications, the number of passes dropped sharply in 2014 but then bounced back in 2015 (for all subjects but arts and modern languages) and changed very slightly during the 2015-2017 period. The former drop could be attributed to a number of reasons, mostly to the existence of a large number (97,000) of entries to subjects at Intermediate 2 in 2014, that were not included in the National 5 statistics. Furthermore, in the cases of English and Maths, this may be explained by the removal of the Standard Grade/Intermediate twin track, which put an end to the practice of presenting students for level 5 qualifications on two occasions.

In the case of arts and modern languages, these figures were low in 2014 and did not recover thereafter, suggesting that the decline in numbers may well have been due to curriculum narrowing, as students abandoned low status subjects in the face of reduced choice. Interestingly, these figures suggest that the number of students taking arts, social studies, modern languages science and technical subjects, and applied or vocational subjects remained relatively stable over the 2015-2017. Yet when we express passes as a proportion of subject enrolment, in order to control declining enrolment at subject level, the trend show increasing level of attainments in Maths during 2015-2017, unchanged levels of attainment Modern languages and science and technological

subjects, and a very slight decrease in the attainment levels for Arts, social subjects and applied/vocational subjects. Therefore, we did not find evidence that narrowing the curriculum led to a decline in attainment at SCQF national 5 level. But we did find that over the period 2014-2017 passes in Maths and English increasingly accounted for a larger proportion of the overall cohort intake, while there was a decline in passes expressed as the proportion of total cohort enrolment in Arts, Modern languages, social subjects and to a lesser extent in Science and technological subjects. This seem to be linked to the narrowing the subject choices. Furthermore, we did find that there was a decline in the number of passes at National 4 level qualifications over the period 2014-2017 for all subject groups, which seem to be linked to the changes in the Curriculum.

We did not find evidence of curriculum narrowing having a negative impact on the qualifications of school leavers. Our findings indicate that the relationship between the changes in curriculum and the attainment of school leavers in Scotland are complex. They suggest that, for example, for those students attaining 6 level 5 qualifications, there is an increase in attainment as measured by the proportion of A-C passes. Since Curriculum for Excellence and new qualifications were introduced, there is evidence in the reduction in the proportion of school leavers with SCQF level 4 and level 5 qualifications as their highest qualification level. Yet, there is also a significant increase in the proportion of those who leave school with one or more, four or more, and five or more qualifications at SCQF level 6, suggesting a significant improvement in the attainment levels of young Scots.

The increase in the percentage of school leavers with SCQF level 6 qualifications is particularly noticeable in more deprived Local Authorities. Schools in more deprived local authorities are also less likely to offer 8 subjects in S4 and S4 than in less deprived local authorities. This suggests higher staying on rates, and higher attainment, despite a reduction in choice and range of subjects studied.

Therefore, narrowing the curriculum did not appear to have a negative impact on the attainment at the SCQF National 5 level and on the attainment of the Scottish school leavers, as previous studies seem to suggest. Nevertheless, we would offer a cautionary note here. Education is not simply about attainment; enhanced staying-on rates and increased attainment at in school qualifications may be a good thing, and will undoubtedly enhance the life chances of young people leaving school. But set against this is a whole range of issues relating to a narrowed curricular offering in Scotland's schools. These include lower choice leading to narrowed aspirations for future study and possibly for career choices. This is a particular issue as young people are making these choices at the age of around 14, when many will only have vague ideas about their future trajectories. There are implications for society; a broad education is necessary for the formation of future citizens able to make a significant and critical contribution to their social and natural worlds, and premature narrowing will truncate this development. A broader, education, and inclusion of such subjects as modern languages, arts and social subjects such as history, geography is particularly important for young people from less advantageous socio-economic background. These young people often miss out on chances to develop cultural and social capitals, even if they do well academically. A broad curriculum that allows building up and/or enhancing cultural and social resources is particularly important for these young people.

There are issues relating to the numbers of students able to subsequently pick up courses at higher levels. Higher study will often involve prerequisite study in the same subject, and so dropping a subject at 14 will preclude it being studied later in the senior phases. This would seem to have particular implications for lower status subjects; while our analysis suggests small impact on many such subjects, with the possible exception of Modern languages, other data suggest an overall decline in numbers taking languages and other low status subjects, post-16. Further research, particularly at the level of schools, is necessary to explore such trends, and the next phase of our research will pick this up via further secondary data analysis and qualitative research with schools.

Another question that needs to be addressed is whether the narrowing the curriculum has an impact on the post-compulsory transitions and in particular on transitions into higher education. Therefore, the next phase of our research will also include the examination of the linked school leavers attainment data and the UCAS data on the higher education applications and admissions. The latter data include among the rest the information about socio-economic background of students and would allow addressing an important question whether changes in Scottish Curriculum have a differential effect on transitions from school to higher education of young people from different socio-economic background.

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Appendix 1.
Subject coding.

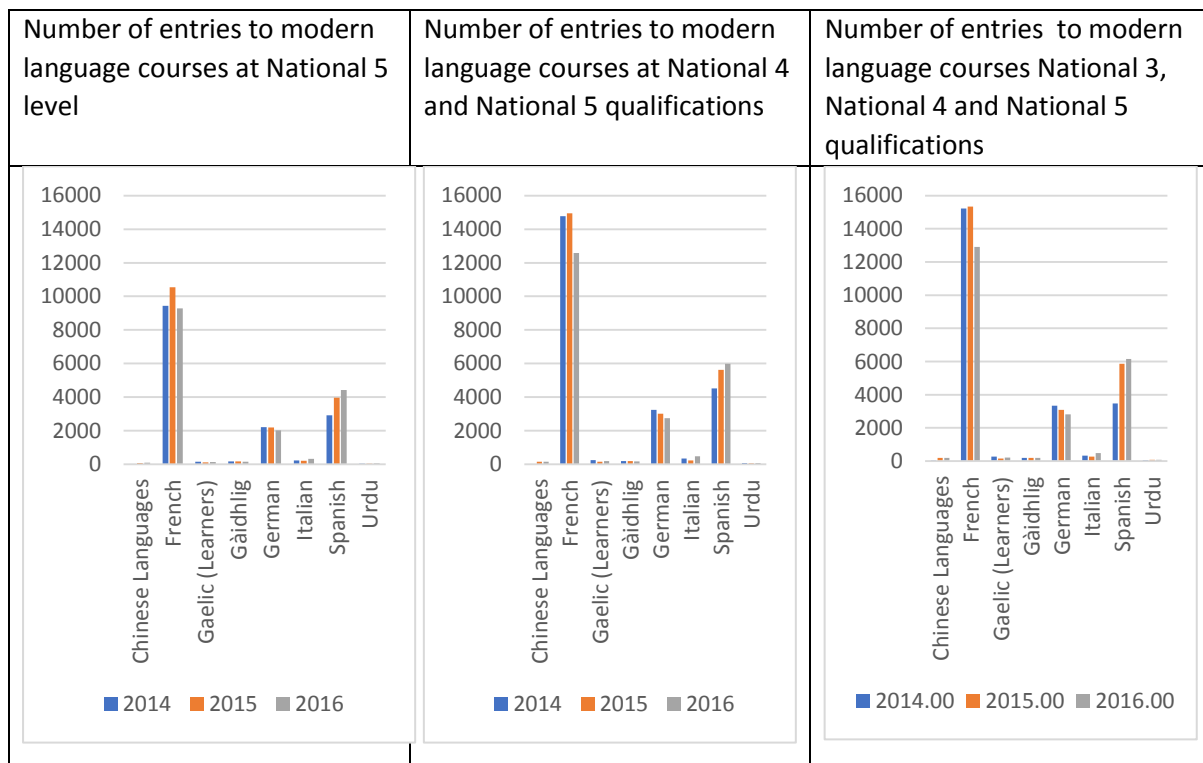
English	Modern languages	Classical/other languages	Maths	STEM	Social subjects	Applied subjects	Arts
English; English for Speakers of Other Languages.	French; German; Italian; Spanish; Russian; Gaelic (Learners); Gàidhlig; Urdu; Chinese; Languages.	Classical Greek; Latin; Classical Studies.	Mathematics; Lifeskills Mathematics.	Biology; Bio-technology; Human biology; Chemistry; Computing; Environmental Science; Electronic and Electrical Fundamentals; Engineering; Information Systems; Technological Studies; Technology; Practical Electronics; Applied Practical Electronics; Electrical Installation Fundamentals; Engineering Science; Geology	Geography; History; Psychology; Religious, Moral and Philosophical Studies; Sociology; Economics; Media Studies; Modern Studies; Philosophy ; Managing Environmental Resources; Accounting; Administration; Administration and IT Business Management.	Design and Manufacture; Care; Craft Skills; Fashion and Textile Technology; Health and Food Technology; Home economics; Hospitality; Physical Education; Practical Metalworking; Product Design; Selling Overseas; Tourist Destinations; Travel and Tourism; Woodworking Skills; Practical Woodworking.	Art and Design; Dance; Drama; Music, Graphcom.

Appendix 2.

The 2014-2016 trends in entries by subject group at:

- (a) National 5 qualifications:
- (b) National 4 and National 5 qualifications
- (c) National 3, National 4 and National 5 qualifications

Number of entries at National 5 level, by subject group	Number of entries at National 4 and National 5 qualifications, by subject group	Number of entries National 3, National 4 and National 5 qualifications, by subject group
<p>Bar chart showing the number of entries at National 5 level by subject group for 2014, 2015, and 2016. The y-axis ranges from 0 to 100,000. The x-axis lists subject groups: applied and vocational subjects, arts, English, Classical languages, Maths, Modern languages, social subjects, and STEM. Entries generally show an upward trend over the three years.</p>	<p>Bar chart showing the number of entries at National 4 and National 5 qualifications by subject group for 2014, 2015, and 2016. The y-axis ranges from 0 to 100,000. The x-axis lists subject groups: applied and vocational subjects, arts, English, Classical languages, Maths, Modern languages, social subjects, and STEM. Entries generally show an upward trend over the three years.</p>	<p>Bar chart showing the number of entries at National 3, National 4, and National 5 qualifications by subject group for 2014, 2015, and 2016. The y-axis ranges from 0 to 100,000. The x-axis lists subject groups: applied and vocational subjects, arts, English, Classical languages, Maths, Modern languages, social subjects, and STEM. Entries generally show an upward trend over the three years.</p>
% of entries at National 5 level, by subject group	% of entries at National 4 and National 5 qualifications, by subject group	% of entries National 3, National 4 and National 5 qualifications, by subject group
<p>Bar chart showing the percentage of entries at National 5 level by subject group for 2014, 2015, and 2016. The y-axis ranges from 0.0 to 25.0. The x-axis lists subject groups: applied subjects, arts, English, languages, Maths, Modern languages, social subjects, and STEM. The percentage of entries is relatively stable across the years for each subject group.</p>	<p>Bar chart showing the percentage of entries at National 4 and National 5 qualifications by subject group for 2014, 2015, and 2016. The y-axis ranges from 0.0 to 25.0. The x-axis lists subject groups: applied subjects, arts, English, languages, Maths, Modern languages, social subjects, and STEM. The percentage of entries is relatively stable across the years for each subject group.</p>	<p>Bar chart showing the percentage of entries at National 3, National 4, and National 5 qualifications by subject group for 2014, 2015, and 2016. The y-axis ranges from 0.0 to 25.0. The x-axis lists subject groups: applied subjects, arts, English, languages, Maths, Modern languages, social subjects, and STEM. The percentage of entries is relatively stable across the years for each subject group.</p>



¹ Excerpt from the Scottish Credit and Qualifications Framework

SCQF level ¹	Qualification 2014 onwards (<i>prior to 2014</i>)	School year (typically)
3	Access (<i>Standard Grade Foundation and Access</i>)	S4
4	National 4 (<i>Standard Grade General and Intermediate 1</i>)	S4
5	National 5 (<i>Standard Grade Credit and Intermediate 2</i>)	S4
6	Higher	S5 and S6
7	Advanced Higher	S6

² S4 denotes the 4th year of secondary schooling in Scotland, and the final year that is compulsory. It is broadly equivalent to Year 11 in England.

³ We note here that some schools maintained the old qualifications in 2014, when the new qualifications were first offered. This perhaps contributes to the messy nature of the statistics (including the fluctuations in numbers that we note elsewhere in the paper) in 2014.

⁴ Scottish government figures (2013) record 364 state-funded secondary schools in Scotland, including a small number of composite primary-secondary schools (e.g. 5-16 age range). See <http://www.gov.scot/Topics/Education/Schools/FAQs>

⁵ We note here that the figures on the SQA website do not provide such a clear picture (for example, they do not differentiate between levels 3, 4 and 5 for Standard Grade in its final years), and thus we are relying on Scott's figures for the final years of the old system.

⁶ Additionally, the SQA statistics provides information on numbers of entries to Access and Intermediate level qualifications.

⁷ In 2015 the number of entries at Intermediate 2 level had become very small, at about 10,000 entries, compared to about 288,670 entries at National 5 level. Similarly, in 2014-2015, in addition to entries at National 4 level, students also entered subjects at Intermediate 1 level.

⁸ STE(-M) refers to science and technological subjects

⁹ This is encouraging trend, yet one needs to rule out that the increase in the percentage of A-C passes between 2014 and 2015 is not linked to transition from old to new systems of qualifications, in particular that a relatively low proportion of A-C passes in 2014 for some subjects is not a of excluding a very considerable number of entries (and consequently passes) at Intermediate 2 level from the National 5 statistics.

¹⁰ Percentage of awards at Access 3 level qualifications for 2013

¹¹ Percentage of awards with grades 1-3 (standard grades qualifications) for 2013

¹² We combined the figures for the two, but note that there might be a problem of double counting.