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The attainments of pupils receiving Gaelic-medium primary education in Scotland

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Introduction

This *Interchange* reports the outcomes of the first research study designed specifically to compare the academic performance of primary pupils educated through the medium of Gaelic with their English-medium educated counterparts. The research, commissioned by the Scottish Office Education and Industry Department, was carried out by a team drawn from the University of Stirling, the Scottish Council for Research in Education (SCRE) and the Lèirsinn Research Centre (Sabhal Mòr Ostaig, UHIp). The project collected data on pupils' attainments over three school years -1995-96, 1996-97 and 1997-98. Parents with children attending Gaelic-medium classes were surveyed in 1997 and headteachers of primary schools with Gaelic-medium classes in 1998-99.

Background

One of the main aims of Gaelic-medium education is to enable children to develop their personal and educational potential in and through the Gaelic language and culture without suffering any disadvantage when compared to English-medium educated children. Gaelic-medium education is not provided as a matter of course nor as a right. However, demand grew significantly in the mid-1980s as a growing number of people recognised the need to preserve and regenerate Gaelic language and culture, resulting in a number of initiatives. Gaelic-medium education, together with Gaelic media programming, Gaelic arts and Gaelic community and economic development were viewed as key components in the attempt to halt and perhaps reverse the decline in the number of speakers, documented in national censuses throughout the twentieth century. In 1921 there were 158,779 Gaelic speakers aged three or over - in 1991 the figure was 65,978, the majority of whom were older people.

Gaelic-medium education is delivered through a variety of models, but they are all centred on the principle that Gaelic is used as the main medium for teaching and learning from Primary 1 onwards (and increasingly in pre-school education). English is introduced progressively as the pupils proceed through primary but how this is achieved varies from model to model. In some cases, English is taught through the medium of Gaelic; in others English is taught in English. In some schools there is an immersion phase for the first two to three years, followed by a

Gaelic-dominant bilingual phase. In others, the emphasis shifts towards a greater use of English as the teaching medium in the last two years of primary school.

When this research was commissioned in 1995 there were 51 primary schools in Scotland in which some pupils received Gaelic-medium education. In 1999 there were 56 primary schools with Gaelic-medium classes/units and one Gaelic-medium primary school had been opened in Glasgow. The research team worked with the 31 primary schools that had, or would have, classes at P7 during the period of the research.

The linguistic and cultural backgrounds of children coming into these Gaelic-medium classes is diverse - some already have a degree of fluency and are exposed to the language and culture at home and in their communities; others have limited fluency and some only a few words and phrases. In the initial years of primary education this has often resulted in greater emphasis being placed on language acquisition than curricular learning. Consequently there has been a tendency to assume that in specific curriculum areas Gaelic-medium educated children have slightly different learning rates to their English-medium-educated counterparts in the early and middle years of primary. However, international research on second language immersion suggests that they tend to catch up by the end of primary school.

Methodology

Measures for learning outcomes

The aims of the project were to assess:

- the standards of pupils' achievements against the national targets set out in the *5-14* programme

- the performance of pupils taught in Gaelic-medium classes in comparison with national performance levels.

5-14 assessments

In order to address the first aim, we collected information about the judgements that teachers are required to make about the achievement of all pupils, using the *5-14* criteria. The *5-14* curriculum concentrates on five main areas:

- language

- mathematics

- environmental studies

- expressive arts

- religious and moral education.

The *5-14 Guidelines* for each curricular area give a detailed description of attainment outcomes, strands and targets. Attainment outcomes reflect the main areas of knowledge, skill and understanding. Each of these areas is further subdivided into strands, which are key aspects of learning. Each strand is set out in terms of targets at five levels of progression, labelled A to E. (Subsequent to the completion of research, Level F was introduced to allow extra 'headroom' for more advanced pupils.) The languages for which there are *5-14 Guidelines* are English, Gaelic, Latin and Modern European languages.

The Gaelic *Guidelines* distinguish between fluent speakers (normally Gaelic-medium pupils) and learners of Gaelic. The attainment targets for learners are intended to be used flexibly. The following targets apply to fluent speakers/Gaelic-medium pupils.

Figure 1: Targets for Levels

Level A	Should be attainable in the course of the first three years at primary schools for almost all pupils
Level B	Should be attainable for some pupils in P3 or even earlier, but certainly by most pupils in P4
Level C	Should be attainable for most pupils in the course of P4 to P6
Level D	Should be attainable for some pupils in P5 or P6 or even earlier, but certainly by most in P7
Level E	Should be attainable for some pupils in P7 or S1, but certainly for most in S2

The *5-14* assessments are intended to help in planning educational provision in class and school, and to inform parents of their children's progress. As there is no central collection of these data, no national average attainments can be computed.

AAP assessments

To approach our second aim it was necessary to use data generated by the Assessment of Achievement Programme (AAP). This is a three-year rolling programme which surveys the achievements of pupils in English, mathematics and science. This is done by testing a nationally representative sample of pupils at P4, P7 and S2. However, because the samples only represent around 2 per cent of the school population within each given age range, it was unlikely that they available in English versions, which necessitated additional testing and the translation of mathematics and science tests into Gaelic. There was no practical testing in mathematics or science.

The relationships between the two types of pupil assessment

As the AAP was instituted before the advent of the *5-14* programme, it did not originally report results in relation to the *5-14* targets, but in terms of mean scores on each specific test item. After the introduction of *5-14* it was decided to relate the AAP test scores to the *5-14* levels, a change which was phased in gradually and was still in train during the course of this project.

The two types of assessment data are complementary. The collection of pupils' *5-14* levels provided information about the performance of individual pupils in relation to national targets and expectations set out in the guidelines. It was also possible to compare the performance of Gaelic-medium pupils with other English-medium-educated pupils in the same schools. In addition, a sample of primary schools without Gaelic-medium classes also provided aggregated information on pupils' attainments in English to permit further comparison. The AAP results enabled mean scores of groups of pupils on selected tests to be compared with national means.

Timescale for data collection

The assessment data were collected in May and June of each year (1995-98) as follows:

- *5-14* levels of attainment in Gaelic (P3, P5 and P7) and English (P5 and P7) were collected in all three school years, whilst levels of attainment in mathematics were collected for P 5 in 1996-97 and P7 in 1997-98. Assessment data for a small sub-sample of pupils in all three school years permitted an element of longitudinal analysis on their progress over the period of the project

- AAP data for science (P4 and P7) were collected in 1995-96, for mathematics (P4 and P7) in 1996-97 and for English (P7 only) in 1997-98.

The key findings

We wanted to address three related questions:

- were Gaelic-medium-educated primary pupils performing according to the expectations set out in the *5-14* attainment targets?

- how they were faring in comparison with their English-medium counterparts in the same schools, the same authorities and nationally?

- were there any social and educational factors which had a particular impact on the progress and achievements of Gaelic-medium-educated pupils?

5-14 Attainments of Gaelic-medium pupils at P3, P5 and P7

Attainments in Gaelic

Although there were some variations in the returns over the three school years, the trends across all four Gaelic language competencies (listening, talking, reading and writing) were all in the same direction, as follows:

- almost all of the pupils in P3 attained level A or higher in all four language competencies, in line with the *5-14* targets

- the majority of P5 pupils were either at levels B or C, which seems slightly below what would be expected. However, teachers were asked, when providing attainment data, to assess each pupil's development since formal testing (which, in some cases had taken place several months earlier.) When this was taken into account, most of the Gaelic-medium pupils were at Level C

- at P7 around three fifths to two thirds of the pupils had attained either levels D or E for Gaelic listening, talking and reading. This is only slightly below what would be expected in terms of the national targets. However, performance in Gaelic writing was considerably below expected performance and is clearly an area of teaching and learning that needs further development. It should be noted that a similar, though less marked, pattern was found in the performance of English-medium pupils.

Attainments in mathematics

The following emerged from our research:

- almost all of the pupils at P5 were either at level B or C, with over half attaining level C or above for 'Information handling' and 'Number, money

and measurement'. Fewer (around two fifths) attained Level C or better for 'Problem solving and enquiry' and 'Shape, position and movement'. This is slightly below the expected performance for P5 pupils. However, two points should be taken into account. First, when teachers' assessment of pupils' development since formal testing was factored in, it was found that the majority of pupils were at level C -although the pattern of differential across the four competencies was still apparent. Second, the performance in mathematics of the two English-medium samples of P5 pupils (those in the same schools as the Gaelic-medium pupils, and the aggregated sample of pupils from other schools) was also below expectation (although their results were similar for all four competencies)

- over three quarters of P7 Gaelic-medium pupils had attained at least level D, which is in line with national targets and the differential in performance across the four competencies was no longer evident.

It is not possible to explain these variations, particularly in the middle years of primary school, without further research into the way that mathematics is taught in the Gaelic medium. It may be that 'Problem solving and enquiry' and, to a lesser extent, 'Shape, position and movement' are more language-dependent that the other two learning outcomes - but this is just speculation at this stage.

Attainments in English

In all three school years covered by the project the performance of P5 and P7 Gaelic-medium pupils matched the national targets for all four English language competencies. We found that:

- almost all P5 pupils were either at levels B or C for English listening, talking, reading and writing

- around three quarters of P7 pupils had attained at least level D for listening, talking and reading in English. Performance for English writing matched this trend in 1997-98 but was slightly lower in 1995-96 and 1996-97 (when around three fifths of the pupils attained levels D or E).

Discussion of *5-14* findings

Our research indicated that the Gaelic-medium pupils in our sample are meeting the national attainment targets at P3 (Gaelic only), P5 and P7 (Gaelic, English and mathematics). This includes those for whom Gaelic is a second language. However, we found that:

- more thought needs to be given to how to help pupils write creatively in Gaelic

- some Gaelic-medium pupils, although meeting the national targets for Gaelic at P7, are performing even better in English

- some more thought needs to be given to teaching some aspects of mathematics through the medium of Gaelic, particularly in the middle years of primary education.

Comparisons of pupils' attainments in Gaelic-medium primary education with national levels of attainment in the AAP surveys

The AAP results were very useful in enabling us to see how well Gaelic-medium pupils were performing compared both to their English-medium counterparts in

the same schools and pupils in the same age-range across the whole of Scotland. These findings were supplemented by a comparison of the teachers' *5-14* assessments for the samples of Gaelic-medium and English-medium pupils in the same schools and the aggregated sample of English-medium pupils drawn from other Scottish primary schools.

Attainments in science

The AAP science tests were carried out for both P4 and P7 pupils in 1995-96.

- P4 pupils' average attainment scores matched the national average but were significantly below the average scores for English-medium pupils in the same schools

- at P7 the Gaelic-medium pupils were still significantly behind their English-medium counterparts in the same schools, although their attainments were close to the national average.

It was not possible to compare the AAP findings with those from 5-14 since National tests for 5-14 Environmental Studies (including primary science) were not available.

Attainments in mathematics

AAP results were available for both P4 and P7 (1996-97).

- the average attainment scores of the Gaelic-medium pupils in both year groups were significantly higher than the national average

- they also performed better than the English-medium pupils in the same schools

- the gap between Gaelic-medium and English-medium pupils was wider at P7 than at P4.

In comparison, 5-14 teacher assessments at P5 (1995-96) and P7 (1997-98) showed that Gaelic-medium pupils at P5 were higher than English-medium pupils in the same schools in all four areas of mathematical competence; and were slightly below the aggregated sample of English-medium pupils in 'Problem solving and enquiry' and in 'Shape, position and movement' but at the same level in 'Information handling' and in 'Number, money and measurement'. At P7 there were no significant differences between Gaelic-medium pupils and English-medium pupils in the same schools or the aggregated sample in all four areas.

Attainments in English

The AAP results were restricted to P7 pupils. They revealed that:

- Gaelic-medium pupils were significantly ahead of their English-medium counterparts in the same schools in reading and writing, especially in writing

- they were at the same level as the national average in reading and above the national average in writing.

In comparison, 5-14 teacher assessments for English at P5 and P7 showed that: at P5 Gaelic-medium and English-medium pupils were at the same level on all four English-language competencies in the same schools; Gaelic-medium pupils were slightly below the levels of English-medium pupils in the aggregated sample.

At P7, Gaelic-medium pupils were consistently ahead of English-medium pupils in the same schools on all four competencies, and on a par with the aggregated sample.

Discussion of AAP findings

The AAP findings taken together with the 5-14 data suggest that by the end of primary school Gaelic-medium pupils were somewhat behind English-medium pupils in science but on a par or ahead of them in both mathematics and English. The research was not commissioned to explain why the findings were as they were. It may be that the Gaelic-medium pupils' disadvantage in science arose from the fact that science was the first area to be investigated in the AAP research (1995-96), or that the AAP tests for science had to be administered late in the school summer term. As regards the positive attainments of Gaelic-medium pupils in English, international research suggests that the process of becoming literate in two languages serves to develop an underlying competence in language which subsequently helps learners to do well in any language that they learn or use.

Home, school and community influences on progress in Gaelic-medium education

Parents of Gaelic-medium pupils may well have a significant impact on the provision of Gaelic-medium education in these schools. Therefore we surveyed parents on a number of issues relating to the provision of Gaelic-medium education. A postal questionnaire was distributed in 1997, which provided information about 577 children from 238 families and 32 primary schools.

What did parents think of Gaelic-medium primary education?

Parents surveyed were mostly very satisfied with the education their children were receiving. They highlighted the competence of the teachers and their high level of commitment. They were also aware of some of the problems Gaelic-medium education faces - for example, greater support and in-service training for Gaelic-medium teachers in post is required, and there is a real need for developing more teaching resources in some areas of the curriculum (particularly mathematics and science). Many were particularly concerned about the vulnerability of Gaelic-medium education in primary schools because of the lack of suitably qualified teachers. Some were also worried that the small class sizes and favourable teacher:pupil ratios, which they associated with Gaelic-medium education, would be eroded, and they were also concerned about the continuity of Gaelic-medium education - within schools, between schools and into secondary education.

Around half of the fathers and two thirds of the mothers surveyed reported that they had at least a basic competence in Gaelic. However, most of them said that they mainly spoke English at home. Only one in five said that they used Gaelic at home at least as often as English. Two thirds of the respondents said that their children spoke at least as much Gaelic at home as English. Many of the parents encouraged relatives and friends to use Gaelic as well to help maximise the children's exposure to the language. Only a small minority of parents read much Gaelic, but over two thirds said there was Gaelic reading material in their home and most of the respondents and their children watched Gaelic television programmes.

What did senior staff in schools think of Gaelic-medium education?

Questionnaires were sent to the headteachers of the 34 primary schools which offered both Gaelic-medium and English-medium education from P1 through to P7, and had taken part in the AAP surveys and the teachers' 5-14 assessments. Twenty-seven completed questionnaires were returned. Seven of these were from schools in communities where about three quarters of the population were Gaelic speaking, and replies were received from a similar number of schools where there were comparatively few Gaelic speakers in the local community. Key findings of the survey are outlined below.

Parental support

Gaelic-medium parents were more likely to be described by headteachers as being actively involved in fund-raising, organising social functions and helping with resource-based needs. Some headteachers felt that these parents were more interested in educational issues and were more likely to be educationally and politically active on behalf of Gaelic language and culture. Most headteachers stressed that the differences between Gaelic-medium and other parents were marginal rather than highly significant in terms of the home-school interface.

Social background of Gaelic-medium parents

Some headteachers commented on the different socio-economic and cultural backgrounds of the two groups of parents. Although occupational data on parents was not obtained, an analysis of free school meals entitlement supports this general perception. Sixteen out of 24 schools provided this information, which showed there was a higher proportion of English-medium pupils claiming this entitlement. In all, 19 per cent of English-medium children had a free-school-meals entitlement compared with 6 per cent of Gaelic-medium pupils.

Teachers and class sizes

Only 14 per cent of the Gaelic-medium teachers taught single-year groups, as opposed to 60 per cent of the English-medium teachers. On the other hand, the teacher:pupil ratio was more favourable in most Gaelic-medium classrooms.

School-based resourcing and support

Generally, headteachers thought both sectors were adequately resourced in terms of equipment. It was felt that Gaelic as a subject was less well resourced than English but most still felt that resources were adequate. Mathematics was thought to be adequately resourced in both sectors but there was a widely held view that the Gaelic-medium sector was less well provided with curriculum resources than the English-medium for Environmental Studies, Expressive Arts and Personal and Social Education.

Integration

We wanted to know if senior staff in schools perceived the existence of Gaelic-medium units alongside English-medium classes as potentially or actually divisive. It was acknowledged that some differences between the two groups were inevitable - Gaelic-medium teachers encouraged pupils to use Gaelic in the playground in order to consolidate the language immersion process. Gaelic youth clubs, *Sradagan* groups and community activities could also sometimes seem exclusive. The general perception was that schools were well integrated,

however, and that teachers, parents, school boards and indeed the pupils made conscious efforts to promote a united ethos.

Do school size or class size make a difference?

It is commonly held that a clear relationship exists between attainment and class size - lower teacher:pupil ratios may ensure more opportunities for differentiated and one-to-one teaching. This view is prevalent amongst Gaelic-medium parents. The relationship between size of schools and attainment is less clear. On the one hand, small schools sometimes have greater continuity of teaching staff and greater parental involvement and, sometimes, class sizes are also smaller. On the other hand, small schools may not always be as well resourced - teachers are often teaching composite classes, and it may be more difficult for the full-time teaching staff to deliver the whole curriculum.

The AAP study presented a mixed picture. Generally, the results from small schools contributing to the AAP surveys were higher than average at P4 and P7 for science and at P7 for English. However, the results from small schools for mathematics at P7 were lower than the national average. It was not possible within the scope of the AAP surveys to compare the attainments of Gaelic-medium and English-medium pupils in small schools and small classes against the national average. This comparison was done, though, for the *5-14* teacher assessments. In terms of performance in Gaelic, it was found that the larger primary schools and the schools with larger Gaelic-medium classes were more likely to have P3 pupils at level B or above for all four language outcomes. However, size of school and size of class were not found to be significant when analysing the performance of P5 and P7 pupils.

The attainment of Gaelic-medium pupils in English listening and talking were higher for P5 and P7 pupils in the smaller Gaelic-medium classes and the smaller primary schools (i.e. those with pupil rolls of 100 or less.) But this pattern was not consistent across all three school years of the project.

Neither school size nor class size had a significant or consistent effect on Gaelic-medium pupils' performance in mathematics.

Are there clear gender differences in the attainment data?

The AAP surveys showed that in schools with Gaelic-medium classes boys tended to do better than girls in science, whether they were in Gaelic-medium or English-medium classes. Gaelic-medium boys did better than Gaelic-medium girls in mathematics and Gaelic-medium girls did better than the boys in English. The gender patterns here were not always identical to the gender patterns apparent in the test scores of the English-medium pupils. For example, the English-medium boys did less well than the English-medium girls in mathematics and the Gaelic-medium girls also did less well than the English-medium girls in the same subject.

In the *5-14* teacher assessments gender differences were not so consistent as in the AAP surveys. There was considerable variability across the three school years. For example, in 1997-98 Gaelic-medium girls at P7 were outperforming the boys in both Gaelic reading and writing, whereas in 1996-97 there were no significant gender differences. There were none in English attainment at P7 in any of the years and gender differences at P5 varied from one year to the next.

The findings for mathematics did not match the pattern emerging from the AAP surveys. We found that Gaelic-medium girls performed better than boys at P5 but there were no significant gender differences at P7.

What do the findings mean?

The data gathered from parents, schools and local authorities suggest two clusters of factors were in operation (see Fig. 2).

Figure 2: Factors in Gaelic-medium and English medium education

Gaelic-medium primary education	English-medium in same schools
Education mainly through Gaelic, but different models for this across Scotland	Education through English, though some Gaelic may be taught
Class-size tends to be small	Class-size tends to be larger
Classes tend to be mixed-age	Classes tend to be same/similar age
Materials tend to be less plentiful	Materials tend to be more plentiful
Parents tend to be closely involved with the school	Parental involvement is typical of schools generally
Pupils tend to have less free school meals entitlement	Pupils tend to have more free school meals entitlement

The above factors are not the only ones that might be influencing pupils' attainments but the limited list suggests caution in concluding what it was that was helping Gaelic-medium pupils to do well. It is probable that the factors in each column were interacting with each other in order to produce an effect. Overall, though, we see our results as being consistent with the substantial body of international research which suggests that children benefit educationally if their parents and their primary schools help them to acquire a second language in order to learn serious subject-matter at school.

Issues

Our study was designed to answer very specific questions but it also generated a number of potentially important research questions. For example, there should be further research to:

- chart more precisely the course and rate of children's Gaelic language development. National *5-14* tests and AAP assessments are not designed to demonstrate how vocabulary, syntax, discourse and other language functions develop over time

- see what happens to Gaelic-medium learners in the long term. In particular, what happens to their language competence if the curriculum at secondary school is not delivered in Gaelic. What is the impact of bilingual development on their learning of a modern foreign language?

- ®examine the complexities of being bilingual and bilingual thinking. Which languages do Gaelic-medium pupils think in as they proceed through Gaelic-medium education? What is the impact of bilingualism on their cognitive development? What are the implications for their emerging sense of personal and cultural identity?

Conclusion

From the evidence of this study we conclude that pupils receiving Gaelic-medium primary education, whether or not Gaelic was the language of the home, were not being disadvantaged in comparison with children educated through English. In many though not all instances they outperformed English-medium pupils and in addition gained the advantage of having become proficient in two languages. As such, the findings of our research study, though identifying areas for further progress, should bring reassurance about the attainments achieved by Gaelic-medium pupils - to parents, pupils, teachers, school management, local authorities, national officials and not least the public in Scotland.

The full report, *The Attainments of Pupils Receiving Gaelic Medium Primary Education in Scotland*, is available from Scottish CILT, Pathfoot Building, University of Stirling, Stirling FK9 4LA (tel: 01786 467631/fax: 01786 467632), price £12.00 plus £1.50 p & p.

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