

## AN AGENDA FOR RESEARCH AT A TIME OF EDUCATIONAL REFORM IN SCOTLAND

### Summary

- *Research is not an arcane activity separate from the development of policy. It is the tool by which policy is understood.*
- *There is a need for systematic evidence, rigorously analysed, in order not only to evaluate the impact of Curriculum for Excellence and the reforms to teacher education that will follow from the Donaldson review but also, first, to understand what they mean.*
- *That evidence has to be produced in a manner that is independent of the policy processes that produced the reforms, and has to be publicly available for further scrutiny by researchers other than those who generated the data. These principles of independent data independently analysed are the necessary accompaniment of a reform with the principles of Curriculum for Excellence.*
- *In order for it to be valid and to contribute to intelligent policy making, evaluation must relate to the aims of the reform and the criticisms to which the reform has been subjected. It must provide evidence on what is and what is not working and why this is so, and evidence-based proposals for improving matters. It must use a variety of kinds of data subjected to rigorous analysis.*
- *Evaluation of Curriculum for Excellence and the reforms to teacher education against their diverse aims will require subtle research designs generating complex data. Only with that sort of responsiveness to the intricate details of the changes will a proper understanding be possible of how they are truly operating and how they may be taken forward.*
- *In the case of Curriculum for Excellence, the most basic requirement of evaluation is an annual survey of pupils' experience and attainment, of the kind that is proposed in the new Scottish Survey of Literacy and Numeracy, but going far beyond that. It is not enough to measure only performance in these two areas: that has to be done across the curriculum, including at least also English (not merely literacy), mathematics (not merely numeracy), the separate sciences, and the distinct disciplines that are sometimes grouped as the social subjects: history, geography, Modern Studies, economics.*
- *Curriculum for Excellence also requires, for deeper understanding of pupils' development, a survey that is longitudinal in scope to understand how the curriculum is contributing to their progress. The Growing Up in Scotland survey would be ideal for this purpose.*
- *Because Curriculum for Excellence insists on the importance of children's learning applicable skills, it will be necessary to carry out surveys of whether they have learnt properly to use what they have learnt by the point at which they leave school. However, before any research could be done, there would have to be much more precise specification of what is expected of pupils by the time they leave school.*
- *The data generated by these complex designs will require appropriately subtle statistical analysis. The necessary knowledge and skills are in short supply in Scottish social science but they do exist, and the academics and other researchers who possess them have good links with appropriate specialists elsewhere in the UK and beyond.*
- *As important as the statistical research will be non-statistical data, for example through collecting written accounts of how the curriculum is being interpreted. Seeking rigorous understanding of non-statistical data is as important and as difficult as achieving the proper complexity of statistical analysis. Those who commission research have to appreciate the need to pay accordingly.*
- *The data gathered from research on teachers should be designed in such a way that it may be matched to respondents in the surveys of pupils in order to understand how teachers' knowledge, practices and opinions contribute to or hinder pupils' learning. In particular, to evaluate the reforms to teacher education it will be necessary to devise statistical measures of the quality of teachers: no understanding of their contribution to pupils' learning would be feasible without that.*

## Background

- 1 The Education Committee of the Royal Society of Edinburgh (RSE), Scotland's National Academy, identifies and promotes priorities for education in Scotland, and at all stages. Scottish school education is facing two important reforms – the implementation of Curriculum for Excellence, and the reform of teacher education that will follow from the Donaldson review when it is published towards the end of 2010. The new curriculum has been frequently described by ministers and other educational leaders as the most significant reform for a generation. That alone would make it likely that the Donaldson review would also have to recommend radical change, and in any case it is likely to do so because of growing dissatisfaction with the character of teacher education, both initial and continuing. The Education Committee continues to engage with, and respond to, the important developments that surround these reforms.
- 2 A frequently enunciated principle of Curriculum for Excellence is that it is intended to be decentralised. The nature of the reform will vary by school, or perhaps even by classroom or the individual child. Specifying what the reform actually is requires careful analysis, made more difficult by the controversies that have surrounded its development. A decentralised initiative surrounded by vigorous debate will not admit of easy definition.
- 3 While the nature of what Donaldson will propose remains to be seen, it would be consistent not only with Curriculum for Excellence but also with the principles enunciated by the McCrone committee of enquiry in 2000 if Donaldson were to recommend that teachers should be encouraged to exercise much greater discretion than has been customary, and that they should be educated in a manner and with the knowledge and capacities to enable them to do that. So there is likely to be a great variety of ways in which this reform will be manifest.

## The Importance of Evaluation

- 4 There is then a need for systematic evidence, rigorously analysed, in order not only to evaluate the impact of the reforms but also, first, to understand what they mean. That evidence has to be produced in a manner that is independent of the policy processes that produced the reforms, and has to be publicly available for further scrutiny by researchers other than those who generated the data. These principles of independent data independently analysed are the necessary accompaniment of a reform with the principles of Curriculum for Excellence: it is the only way to reflect in debate about the reform the pluralism that seems to be its central principle.
- 5 Pluralism of evaluation is also fundamental to the operation of the Scottish Parliament, and of its committees, and to the relationship between the

Parliament and government. It is widely agreed that one of the successes of the new institution has been to create many new opportunities for informed debate about public policy, many new demands on ministers, civil servants and policy advisers to explain in public their actions and ideals, and many innovative ways in which these debates may impinge upon and draw from the general public debate across the country. An important part of these changes has been a new quality of data generated by Scottish government – new social surveys, new attention to research rigour, new dialogue with academics and others who have been able to work in partnership with government for the shared purpose of interpreting the evolving new world of Scottish democracy. Research is thus not an arcane activity separate from the development of policy. It is the tool by which policy is understood. All of this new context of evaluation has required evidence, and the current educational reforms are no exception.

## The Criteria of Evaluation

- 6 Six principles must govern evaluation if it is to be valid and to contribute to the informed public debate that intelligent policy making requires:
  - (i) It must relate to the **aims** of the reform.
  - (ii) It must relate to the main **criticisms** to which the reform has been subjected.
  - (iii) It must provide evidence on **what is working** and on **what is not working** in the reform as implemented.
  - (iv) It must provide evidence on **why** things that are working are indeed doing so.
  - (v) For things that are not working, it must provide evidence that might lead to considered proposals for **improving** matters.
  - (vi) It must use a **variety** of kinds of data, and subject them to properly **rigorous** analysis.

## Understanding Aims

- 7 Aims may be found, to start with, in the policy announcements of ministers and other leading people and agencies. For Curriculum for Excellence that includes the main documentation – especially the original report of the Curriculum review and the series of documents that go under the heading of Building the Curriculum. Aims may also be found in the debates on Curriculum for Excellence in parliamentary committees and in the main chamber, because the reform commands strong consensus across the political parties. If the reform is as fundamental as its proponents claim, then it will outlast any particular government or even the careers of most current politicians. So aims must also be sought in the wider debate beyond government and parliament. In a reform as decentralised as this, moreover, the aims will evolve

in daily practice, and will have to be distilled in retrospect from the understandings of thousands of teachers and others who will be responsible for honing the reform's meaning. Some of that practice will be guided by severe doubts about the reform, criticisms which may well thus be as important for the nature of the new curriculum as the explicit intention of its national champions. In short, understanding the aims of such a change will itself require careful empirical investigation.

- 8 The aims of the reforms to teacher education have not yet been stated officially, but because the ensuing changes will happen in the context of Curriculum for Excellence they, too, will be subject to diverse interpretation. Central specification of what it means to be a teacher would hardly be consistent in practice with the curriculum's principles, even if – as is unlikely – the Donaldson review were to try to impose such a uniform meaning. The aims of this reform, too, will thus require investigation, and the dual approaches to understanding the two sets of changes ought to interact: investigating the multifarious interpretations which new teachers will make of the curriculum will also entail assessing the variety of their professionalism. Professionalism itself will be redefined by the need for innovation that the curriculum will impose.
- 9 Evaluation of the reforms against these diverse aims will require subtle research designs generating complex data. Only with that sort of responsiveness to the intricate details of the changes will a proper understanding be possible of how they are truly operating and how they may be taken forward.

### Evaluation of Curriculum for Excellence

- 10 In the case of Curriculum for Excellence, the most basic requirement of evaluation is an annual survey of pupils' experience and attainment, of the kind that in outline is proposed in the new Scottish Survey of Literacy and Numeracy, but going far beyond that. It is not enough to measure only performance in these two areas: that has to be done across the curriculum, including at least also English (not merely literacy), mathematics (not merely numeracy), the separate sciences, and the distinct disciplines that are sometimes grouped as the social subjects: history, geography, Modern Studies, economics. These topics, covered by the present Scottish Survey of Achievement, but not by the new survey, are as important to monitor as the core skills, especially in order to assess one of the claims made by critics of the reform, that it neglects knowledge in favour of skills. The survey must also collect data that might allow us to explain patterns of attainment, and of variation in attainment. The variation that will occur spontaneously as part of the reform will probably pre-empt the need for any control groups, but it then is all the more important that the character of the variation is understood well. That data must include information about the nature

of the curriculum in each school, specifying questions for which will require much preliminary investigation (some of it non-statistical) as to the range of ways in which the new curriculum is being interpreted. The survey must collect data on children's opportunities to learn outside school, whether in families or in the community, so that the unique contribution of the school might be estimated. This should include data on parental education and social class, but also a lot more, such as cultural resources in the home and the community. Properly valid understanding of any of these questions requires that there be measures of pupils' intelligence.

- 11 Curriculum for Excellence also requires, for deeper understanding of pupils' development, a survey that is longitudinal in scope: that is, it should follow individual pupils over several years in order to understand how the curriculum is contributing to their progress. The Growing Up in Scotland survey (funded by the Scottish Government) would be ideal for this purpose, and so the likely decision not to continue following the cohort of eight-year-olds in it is regrettable in present circumstances. As with the annual monitoring survey, this longitudinal survey should collect data on curricular experience and on potential explanations of pupils' development and attainment, so that the contribution of the curriculum, and of schools' variation of the curriculum, might be assessed.
- 12 Because Curriculum for Excellence insists on the importance of children's learning applicable skills, it will be necessary also to carry out surveys of whether they have learnt properly to use what they have learnt by the point at which they leave school. It could be that the regular PISA surveys might be redesigned to do this. Preferably also there should be longitudinal follow-up of pupils into adult life, to study the long-term persistence of useful skills that might have been acquired in the new curriculum. However, before any research could be done on this, there would have to be much more thorough debate about, and precise specification of, what is expected of pupils by the time they leave school. The Curriculum for Excellence 'experiences and outcomes' remain too vague to be the basis of a practicable research design.
- 13 The data generated by these complex designs will require appropriately subtle statistical analysis. The necessary knowledge and skills are in short supply in Scottish social science (as has been noted by both the ESRC and the Scottish Funding Council), but they do exist, and the academics and other researchers who possess them do have good links with appropriate specialists elsewhere in the UK and beyond. However attractive it might be to funders of research to think that statistical work can be done in a simple manner by automated computer programmes, it is important that they resist this temptation if they do want properly valid statistical understanding.

- 14 As important as the statistical research will be non-statistical data, for example through open-ended interviews, or through collecting written accounts of how the curriculum is being interpreted. That has been mentioned above (paragraph 10) in connection with designing the statistical measures of the variation in the curriculum. It will also be important for understanding, for example, the motivations of teachers and the meaning which teachers attach to the curriculum. In due course, some of the results of such studies might become standardised measures incorporated in the statistical surveys, but that is not the sole reason for undertaking them. Information on motivation and meaning will itself help to define the reform.
- 15 The analysis of the non-statistical data requires as subtle a range of techniques as the statistical work if it is not to result merely in anecdotes. Systematic analysis of interviews is not common enough in educational research, and the result is often biased reports that are distorted by the researchers' ideological predilections. Seeking rigorous understanding of non-statistical data is as important and as difficult as achieving the proper complexity of statistical analysis. Those who commission research have to appreciate the need to pay accordingly.

### Evaluation of Reforms to Teacher Education

- 16 In many important respects, the same kinds of design will be relevant to understanding the reform to teacher education, and indeed the data gathered from research on teachers should be designed in such a way that it may be matched to respondents in the surveys of pupils in order to understand how teachers' knowledge, practices and opinions contribute to or hinder pupils' learning. (Such matching is not at present possible in the Scottish Survey of Achievement.) In particular, to evaluate the reforms to teacher education it will be necessary to devise statistical measures of the quality of teachers: no understanding of their contribution to pupils' learning would be feasible without that.
- 17 For example, there has to be a statistical survey of student teachers and newly qualified teachers in order to understand how they have responded to the reforms. There have to be surveys of teachers when they undertake courses of Continuing Professional Development. There have to be then also longitudinal surveys to investigate how their skills and knowledge have developed over time, whether the new courses and structures of initial and continuing education have contributed to their qualities and

effectiveness, and whether they have become better at leading the curricular reform as a result of having attended such courses. All these surveys would allow strong conclusions to be drawn about the impact of the new courses only if they collected data also on teachers who had not followed them. Non-statistical data from teachers would allow investigation of their values and purposes, and thus would establish whether the image of the teacher embodied in Curriculum for Excellence, with the knowledge, experience and wisdom to be a pedagogical leader, truly was being strengthened by the reforms to teacher education. Once more, as with the pupil data, the proper analysis of all this will require rigorous research skills deployed by expert researchers.

### Conclusion

- 18 None of this will be cheap, and arguing for research at a time of financial stringency is not popular. But the reforms are going ahead anyway, and so their effects will be had regardless. Without proper evaluation, we would not properly understand these effects, nor the inevitable partial failures, and so we would not know whether the money allocated to the reforms was being spent wisely. We would not be able to build upon the successes nor intelligently modify the failures. Innovations – however promising – require good research if they are to be made to grow into better policy.

### Additional Information and References

In responding to this consultation, the Society would like to draw attention to the following RSE responses which are relevant to this subject:

- The Royal Society of Edinburgh's response to *Graham Donaldson's Independent Review of Teacher Education in Scotland* (June 2010)
- The Royal Society of Edinburgh's response to Learning and Teaching Scotland on the *Curriculum for Excellence Draft Experiences and Outcomes for Literacy and English, for Expressive Arts and for Social Studies* (July 2008)
- The Royal Society of Edinburgh's response to Learning and Teaching Scotland on the *Curriculum for Excellence Draft Experiences and Outcomes for Numeracy, Science and Mathematics* (April 2008)

Any enquiries about this submission and others should be addressed to the RSE's Consultations Officer, Mr William Hardie (Email: [evidenceadvice@royalsoced.org.uk](mailto:evidenceadvice@royalsoced.org.uk))

Responses are published on the RSE website ([www.royalsoced.org.uk](http://www.royalsoced.org.uk)).

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