Method in our madness? The advantages and limitations of mapping other jurisdictions' educational policy and practice

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Introduction

Around the world, educational policy makers are looking towards other countries to see what makes them educationally successful. 'High-performing jurisdictions' (HPJ) is a phrase now in fairly common parlance, thanks to the developing strength of the major international comparisons such as PISA, PIRLS and TIMSS and because of the current political interest in such indicators.

The UK, like many other countries, has a deep interest in the educational activities of other nations globally. In September 2012 the UK Secretary of State for Education introduced a reform of the General Certificate of Secondary Education (GCSE).[1] In his statement, which called for the assessment to be replaced, he stressed the importance of comparing England with other nations, particularly those performing strongly upon international comparative measures, and endeavouring to improve the English education system in order to compete with 'the best'; by which he was undoubtedly referring to HPJs. Although the call for the complete replacement of GCSEs has now been withdrawn, their redevelopment is planned and comparisons with policy and practice in other jurisdictions are still strongly advocated politically, not just in respect of assessments, but in all matters educational:

> *I want my children, who are in primary school at the moment, to have the sort of curriculum that children in other countries have, which are doing better than our own.*
>
> Michael Gove, speaking on 'Daybreak', ITV, 8 July 2013.

The art of 'policy borrowing', along with the collation of 'policy wisdom' from other systems requires the collection, collation and interpretation of enormous amounts of information. This is by no means simple. As Marmor *et al*. (2005), writing in the context of US health policies, state:

> *...there is an extraordinary imbalance between the magnitude and speed of the information flows and the capacity to learn useful lessons from them. There is, moreover, a considerable gap between promise and performance in the field of comparative policy studies. Misdirection and superficiality are all too common.*

This article addresses the advantages and limitations of making descriptive comparisons with other jurisdictions. This is often referred to as 'mapping', reflecting the technical definition of the term to mean the construction of graphic representations of information using spatial relationships within the graphic to reveal connections within the data. 'Parallel descriptions' is a term used by Oates (2013) who contrasts this, entirely descriptive, approach with 'analytical transnational comparison' wherein a deeper level of analysis of structure and causes is contained.

These kind of exercises are not unique to any single organisation or country, nor are they a new technique. The Department for Education (DfE) (2012) and the Nuffield Foundation (Hodgen and Pepper, 2010; Hodgen, Marks and Pepper, 2013) both recently used the approach. The DfE used a mapping technique to "analyse the curriculum content of the comparator jurisdictions in order to provide insights into the commonalities and differences", and described the process as "one of the most technically challenging aspects of the content analysis." It seems that the process of carrying out mapping studies and interpreting their findings is sparsely documented. Sumsion and Goodfellow (2004) note that "we found surprisingly little guidance concerning the practicalities of the processes involved."

Given that this type of research is being used to inform thinking in such important contexts, it is vital that the advantages, disadvantages and processes of conducting it are fully reported. This article seeks to take a step in this direction.

What does a mapping exercise/parallel description look like?

Figure 1 shows an example of what a typical mapping exercise may look like. In this instance the columns represent different jurisdictions and the rows pertain to different topics of interest.

These documents are often created using conventional spreadsheet software and can become very large indeed. They are saved from unwieldiness by the facility to hide columns, and the ability to rearrange both rows and columns depending upon how they are being used. In other examples, tables are created using word-processing software, or sets of profiles containing similar information are presented.

The selection of what, exactly, the rows and columns represent is key to the use of the technique as 'mapping', rather than simple recording of information. If, as in the example, different jurisdictions are contained within each column and specific information in the rows, it becomes possible to read across the rows to make direct comparisons between jurisdictions about a particular feature of interest and to read down columns to set the information into each country's context.

Another common technique for systematising information within a mapping study, for example, when mapping curriculum content, is to set the information from a 'master' curriculum into the left hand column (using a new row for each new topic area), and to map all comparators to that master. If this technique is adopted, it must be decided whether topic areas contained in comparator curricula but not in the master

1. GCSEs are taken in a wide range of subjects by the majority of students in England during Year 11 (age 16).

	Jurisdiction A	Jurisdiction B	Jurisdiction C
Cohort size	*2,075,311 students in middle schools in 2006 (middle school covers 3 school years). 99% enrolment in middle schools. 1% of grade 9 was about 6,000 students in 2004.*	*Between 2005 and 2009 the number of leaving certificates (at the end of compulsory education, age 16) ranged between 63,800 and 66,800. Approximately 95,000 registrations are taken for the matriculation examination (at the end of schooling) every year. (This number includes some mature candidates.) In 2011, 12,769 students took A (advanced) level mathematics and 17,799 students took C (basic) level mathematics.*	*Education enrolment by level > Primary level = 7,268,928 Education enrolment by level > Secondary level = 8,131,217 Education enrolment by level > Tertiary level = 3,984,400*
School system structure	*Middle school mostly determined by a lottery (providing a qualification test has been passed). Secondary schooling runs from 12 to 18, with middle schools from 12 to 15 (school years 7-9, sometimes referred to as middle school grades 1-3). Students who have graduated from middle school can attend high school. Students attend the high school in their own district.*	*Compulsory education starts in the year that the child turns 7. There are then 9 years of compulsory schooling. Upper secondary schooling then comprises three years in a choice of either general or vocational programme. An optional year 10 is available to students at the end of compulsory education, who do not feel that they are yet prepared for upper secondary. In 2009, there were a total of nearly 3 100 comprehensive schools, and the network covers the whole country. 45 per cent of the schools accommodate less than 100 pupils. The largest schools have over 900 pupils. During the past few years, the tendency has been to cut down the number of schools through closures, especially of the smallest ones. Since 2004, the total number is down by appr. 500 schools.*	*Has a nine year compulsory comprehensive school system, which runs from 6-15, and a post-compulsory phase from 15-18. Students have to take entrance examination for junior high school, high school and university, if they change institution. It is always the case in public schools and universities.*
Presentation of curriculum (e.g. presented as learning focus and standards, learning outcomes, level statements, content statements)	*There are 5 sections of the 2007 curriculum: Characters: sets out necessity of studying maths and outlines stands of learning. Objectives: sets out objectives of school mathematics, and mathematics at that school level (e.g. middle school). Contents: Learning content of strands set out in 5 areas - numbers and operations, figures, measure, probability and statistics, patterns and problem solving (at middle school it is assigned to particular grades). Teaching & learning methods: considerations teachers concentrate on when teaching principles and rules etc. Evaluation: Ways in which mathematics can be evaluation to help students' learning.*	*Short statement about the core task of instruction Objectives Core contents, arranged into the following themes: -Thinking skills and methods -Numbers and calculations -Algebra -Functions -Geometry -Probability and Statistics Final assessment criteria for a grade of 8 (arranged under the same area as the core content).*	*Objectives and contents for each grade. The terms and symbols that are learned in that grade are also included. There are also comments about writing lesson plans, and the content that is taught in each grade.*

Figure 1: Extract from a mapping exercise

curriculum are to be recorded or not. If they are, extra rows will be used at the bottom of the table, which remain blank for the master curriculum.

Where the spreadsheets are not too large, it is possible to carry out a supplementary exercise, summarising the findings at the end of each row and column. This allows a picture to emerge of the range of policy and practice in existence, relating to each of the issues investigated (from the rows) and an overall picture of each jurisdiction (from the columns).

The finished mapping exercises themselves are a tool, rather than a 'result' *per se*, which can be used by suitable experts to inform their thinking. The spreadsheets can become very large, but remain easily useable, as users tend to home in on a particular topic or jurisdiction and then broaden their use of the spreadsheet horizontally (other jurisdictions' approaches to the same issue or content) or vertically (contextualisation of the issue or content within the jurisdiction of origin).

In some cases, this method of systematising the information is not sufficient. Cambridge Assessment recently experimented with using separate spreadsheets for three aspects of the education system – the system level (how schooling is organised, age of entry, etc.), the curriculum level (what content is taught at which ages) and the assessment level (what is assessed, when and for what purpose). This worked well; the separate exercises could be cross-referenced when necessary, and the 'layered' approach facilitated cross-level analysis of the information.

The key to successful construction of mapping documents lies in the careful selection of the exact format to be adopted, the material which will be covered, and the jurisdictions or countries to be featured. Resourcing is a not inconsiderable concern. Accurate mapping documents are time-consuming to prepare and often require some subject specialised knowledge. A simple study comparing, for example, six countries on about twenty features of their examination system (or mapping the curricula of a single subject) is likely to cost in the region of £3,000 at current rates simply due to the number of hours work required from a suitably qualified person. If many more features of the system are to be compared (and it will be argued later that a comprehensive study needs all possible aspects of the system to be investigated) or multiple subjects are required, costs can easily increase tenfold. If original documents are not available in the language of the researcher, translation costs will add substantially to this.

Sourcing information

Sourcing information for mapping documents can be tricky. In the case of, say, a comparison of curricula, the information may be relatively self-contained and, as long as it is possible to obtain the correct documents (see the discussion of limitations later in this paper); no further difficulties may be encountered. However, if one is embarking upon a mapping exercise where different pieces of information can be sourced in different ways, there is a clear hierarchy of available sources, each of which has advantages and disadvantages.

Provenance and veracity of information is clearly crucial, whilst proximity to source is also important – primary sources are often considered better then secondary sources when seeking facts, although this has been contested (Barton, 2005), and there are a number of highly reputed international comparative organisations whose information is likely to be as accurate as any primary source (and more accurate than some). Figure 2 shows a notional relationship of each of six key sources of information to both provenance and proximity. Whilst there may well be individual exceptions to these rules, in general these reflect our experiences.

Practical and methodological dilemmas

The issue of how much information to record can become problematic for a conscientious researcher. In some instances, national documents or examples of curricula may contain paragraphs of detail, others just a few words. If the largest amounts of available information are recorded in full, then the document quickly becomes very large; if there are numerous instances of very succinct information combined with a few large pieces, the blank spaces around the shorter information can be distracting at best and infuriating at worst to work with. Ever-decreasing font size and frequent revisiting of source material to adjust the level of detail become stock-in-trade tools for those conducting these studies.

Allied to this is the problem of whether to seek to record source material in its own words or whether to summarise or expedite the material in some way. Recording the material in its original form has the advantage of accuracy, but can be very wordy. Additionally, differences in writing style between the original sources of information can result in a very disjointed document which is difficult to read. Summarising the information into the researcher's words can introduce accidental changes in emphasis, meaning and content. Other strategies such as recording segments of the original with ellipsis or introducing tables or bulleted points where prose existed may inadvertently change how the information is interpreted. One solution (and we would advocate this as good practice) is to provide a short summary in the researcher's own words, plus a web link to the original, more detailed source of information. This has the additional advantage of ensuring that anyone using the document has ready access to relevant primary source material.

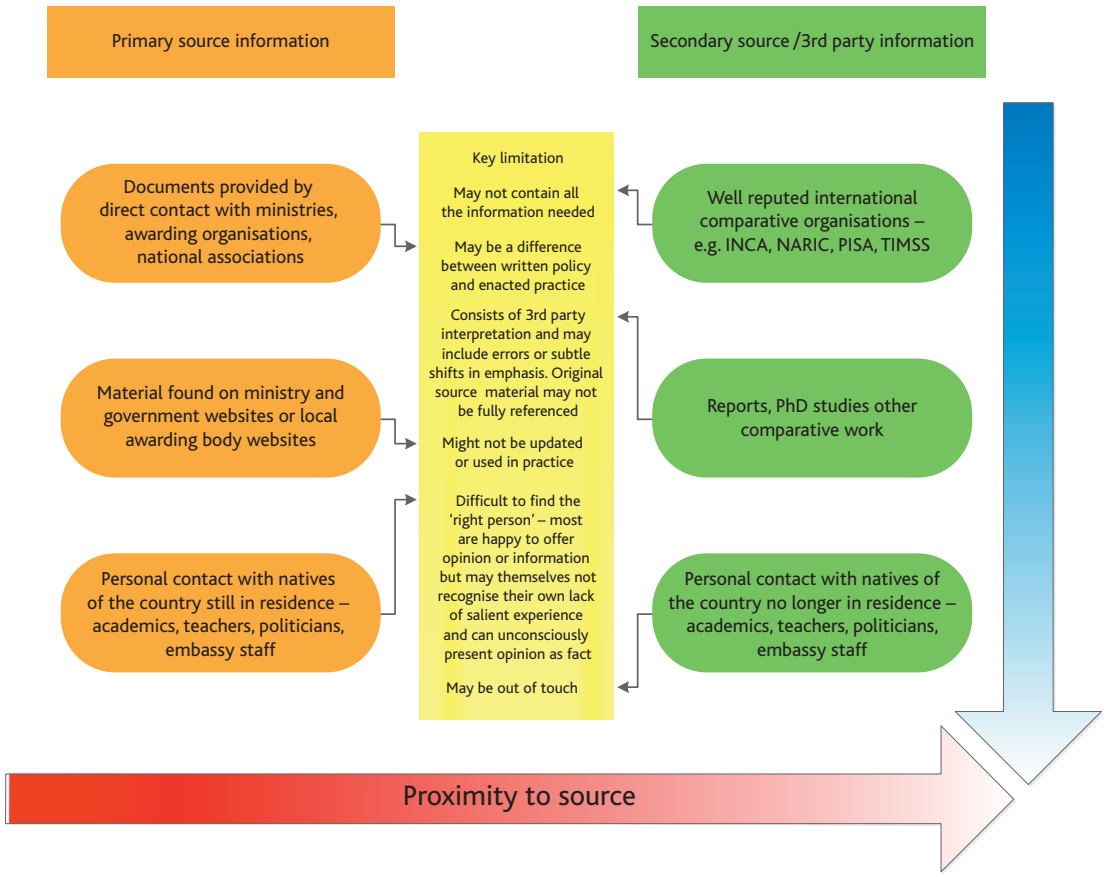

Figure 2: Sourcing information for mapping comparative policies and practice

Of course, it does not work so well when the original material is hard copy, although it might be scanned and added as appendices.

As stated earlier, the finished mapping exercises themselves are a tool which can be used by suitable experts to inform their thinking. Consideration of who is going to use the document, and how they are going to use it, is vital when planning the research. If the document is to be published widely anyone, irrespective of expertise, will be able to draw conclusions from it. In some cases, for example, when users of the document are likely to need specialised expertise in order to interpret the information correctly, this would mitigate against publication, or at least indicate the need to publish in a suitable specialist environment. If the information in the document is likely to be fallen upon by the media or in the political arena, such decisions will need handling with particular care in order that the information within is not only robust but also resistant to misinterpretation.

In many instances the mapping document is for use by the research team themselves or by subject or other suitable experts. In these instances decisions about the level of detail in the content, and also the nature of any limitations encountered when populating the mapping document, will be relatively easy to communicate between different members of the team and the dangers of over-claiming the results or misinterpreting grey areas is greatly reduced.

Strengths and limitations of mapping exercises

It is important to consider the technical strengths and the weaknesses of this approach before embarking upon it, and these are summarised in Figure 3.

As well as considering the advantages and disadvantages of individual studies, it is worth noting just how many such studies, large and small, are undertaken in separate institutions. Few are published formally, and rightly so. In most cases, there are a number of reasons why publication is unwise:

- The content is not absolutely complete
- The accuracy of the content cannot be satisfactorily verified
- The purpose for which the material has been amassed is specific to a particular research question and inappropriate for more general use
- Material would be out of date by the time of any publication

Nevertheless, the sheer volume, and commensurate expense, of this type of work – and there is evidence that it is occurring in similar measure throughout the developed world – should not be underestimated. It is probable that, globally, a huge amount of money is being spent on a research technique that may be lacking in important areas.

A particular danger is that the accessibility of some information leads to a conviction that such comparisons are strong. For example, in February 2013, the UK Education Select Committee travelled to Singapore for four days and one of its members, Craig Whittaker, MP, announced on his web log that: "We quickly started to understand how Singapore produce the best results in the world..."[2]

It is difficult to believe that a complete understanding of such a complex area could occur in just four days. To be fair, the text only says 'started to understand', but there is a clear sense of excitement and persuasion about what had been seen and heard. However, without complete understanding of all pertinent information, these comparisons are necessarily extremely limited.

2. http://craigwhittakermp.wordpress.com/2012/04/23/education-select-committee-visit-to-singapore/, (Accessed 12 July 2013).

Figure 3: A summary of strengths and limitations of mapping exercises as a method of investigating policy and practice elsewhere

Strengths of mapping exercises as a method of investigating policy and practice elsewhere

- Mapping per se facilitates an overview of different jurisdictions with relative efficiency.
- Different 'layers' of mapping documents can provide an effective way of examining the whole system. For example, system level, curriculum level and assessment level. Equally when different subjects are investigated at the same level for a number of jurisdictions, if each mapping document follows the same format, then cross-subject commonalities and differences may also be readily identified.
- Mapping exercises can be extended ad infinitum when required. Extra jurisdictions, or extra areas for investigation, can be added.
- Parallel descriptions can (and should) be updated regularly, if the document is to exist as an on-going resource, otherwise it will become outdated. However, previous versions can be kept as a snapshot of the time in question. For example, the INCA (International Review of Curriculum and Assessment Frameworks) was actively maintained by NFER (supported by QCDA and then QCA) between 1996 and 2013. Upon cessation of active maintenance, a snapshot was taken for posterity by the UK National Archives.

Limitations of mapping exercises

- There is likely to be information which you know must exist, but cannot be obtained.
- There is likely to be information which you have sourced but may in fact be misleading. For example, the written versus enacted curriculum may differ.
- There will be information which you don't know you should even be looking for. Something, perhaps so different to your own culture that you would not think of it.
- Written information (e.g. curriculum material) is often substantiated and exemplified by additional documentation which is not included within the principal record. For example, a curriculum document may have associated schemes of work, and the detail of some jurisdictions' curricula may be contained within state-regulated textbooks. Failure to source or to appreciate the importance of such additional materials will, inevitably, produce extremely misleading results.
- One-off mapping exercises provide a snapshot in time – that time being when the source information was valid (not necessarily when the mapping exercise was completed).
- Policies change – the success of a particular group of students on an international comparative test such as PISA may be due to previous, now outdated, policy. Identifying the appropriate materials to map in this situation can be difficult, and obtaining non-current documentation even harder. This could be termed the 'time-shift problem'.
- Whilst you believe an education system to be good, because that jurisdiction is an HPJ, they themselves may be dissatisfied with the system and be looking elsewhere for inspiration.
- If documents need to be translated, there can be some uncertainty about the accuracy of the translation. Nuances of language can change meaning in very technical ways – a professional, educationally focussed, translation service will be required. Even before any such professional service can be used, some identification of the appropriate material to be translated must occur, and it is very difficult to source material in an unfamiliar language. The chances of finding all the right documents are really quite slim, especially when the third and fourth point above are taken into account.
- The apparent sophistication of large mapping exercises sometimes belies the fact that it simply may not be sensible to be making those comparisons in the first place.

Transforming a parallel description into an analytical transnational comparison

Mapping studies are essentially a systematised method of providing parallel descriptions of policy and practice across different jurisdictions. Parallel description is useful in identifying examples of good practice to follow and poor practice to avoid. It can be used to explore the infrastructure surrounding particular features of systems. It can highlight a variety of approaches and also illuminate practices which are common to many jurisdictions. It can also lead to the realisation that a part of your system might be substantially improved, but it does not provide the evidence necessary to justify major changes in policy or practice (policy borrowing), as Marmor *et al*. (2005) argued when discussing health services conferences in 1990s America:

> *Understood as simply wanting to stretch one's mind – to explore what is possible conceptually, or what others have managed to achieve – this is unexceptionable. Understood as the pursuit of the best model, absent further exploration of the political, social, and economic context required for implementation, this is wishful thinking.*
>
> (Marmor *et al.* 2005).

Effective parallel description is arguably essential to analytical transnational comparison. Certainly it is a highly desirable precursor. Accurate and complete information is clearly fundamental to this further stage of the process. However, analytical transnational comparison requires, at least, two further factors:

1. Much wider and additional contextual information derived from a wide range of sources – social, political, historical, cultural, economic, and educational – all of which interact in a unique dynamic in each individual jurisdiction.
2. A team of information analysts with expertise across all the areas listed in (1) to interpret the material effectively.

Discussion

Often, mapping exercises are used to support investigations into HPJs, as identified by international comparative studies like PISA or TIMSS. In this context, mapping exercises, which provide parallel descriptions of the jurisdictions being compared, can help interpret a situation where ranked position is only a part of the picture. In a further stage, if both the parallel descriptions and the ranked positions on international comparative studies are used as sources of evidence and deeper insights are sought into the reasons why particular strategies succeed in certain places, then valuable intelligence can be developed which might warrant the term 'policy wisdom'.

It would be dangerous to embark upon a comparative approach, without a clear vision of the limitations involved. However carefully mapping documents are constructed, there can be issues with the construction, interpretation and use of the information.

All too often, principal written records are substantiated, exemplified or modified by additional documentation or even oral evidence. For example, the published mark scheme will not have been used in practice without standardisation procedures and communications between different members of the marking team, little of which may be evidenced in the public record.

It is not always possible to source all information; publicly available

documents may not contain the answers to all the questions, and if you contact individuals you cannot always be sure that they are the people best placed to answer the query (even if they themselves think that they are). The intended, and documented, curriculum may be considerably different from the enacted curriculum. By its very nature, omitted information can dramatically skew the picture you receive and your interpretation of that picture. For example, researchers working from documents on the web, or even visiting the jurisdiction in question, are unlikely to see the full picture of education in that jurisdiction. Less successful schools, or elements of the system, are not likely to be shown off in public, by either high- or low-performing jurisdictions.

There is a time lag in the findings of major international studies such as PISA, TIMSS and PIRLS. Success in such studies is most likely related to policies and practices which occurred some years before the studies themselves were conducted, and even further before the results were made available. Allied to this is the fact that most jurisdictions' policies are in some state of evolution or flux most of the time, and few jurisdictions, however successful, are content with their current performance. Identifying the policies and practices which contribute to the success is like catching fireflies – there are a huge number of tiny factors which influence the big picture, and they are gone before you can step towards them.

Misleading information can emerge if a structured approach to comparison is not followed. For example, if a great deal is known about the assessment structure of one jurisdiction and little about the school system, but the opposite applies to another jurisdiction, then comparisons between them will be, at best, patchy. It is also human nature for individuals to become inspired by a particular approach encountered, and potentially blinkered when viewing alternatives. A systematic, carefully constructed, rigorous foundation for comparison, such as a well-conducted parallel description can mitigate against this.

Cause and effect can be readily confused. For example, one could attribute success to a particular element of the system common to HPJs, simply because it was common to a number of them. However, if that same element is also present within the systems of low-performing jurisdictions (and these are rarely investigated to check) it cannot simply be the existence of the policy or practice which is the sole cause for success, and attribution for success must be sought in the details of how it is used.

Educational policies and practice do not exist in isolation. There is a whole web of inter-related circumstances which contribute to the success (or otherwise) of any educational policy – overall culture, parental expectations, dynamics within and outside schools, teen and youth culture, attitudes to teaching and learning, economic performance of the country with its concomitant effect upon disposable income, family attitudes and motivation. This is where analytical transnational comparison comes in.

To plaudit elements of alternative systems without having a clear view of how those elements sit within the context of that system is unlikely to prove fruitful. For example, it might be the case that a very successful jurisdiction sets challenging compulsory examinations at age 15 and students perform well on them, but do so within the context of streaming candidates from an extremely young age and investing very heavily in support for the lower-performing students. To adopt the immediate finding which pertains to the age group of students we are most interested in (challenging examinations at age 15) without pairing it with the information about the approach followed at an earlier stage would be mistaken. It also courts the danger of imposing unsuitable elements into the UK system which are unlikely to be successful in the long term.

Nevertheless, there is much that can be gleaned from studying other jurisdictions' approaches to education if comparisons are undertaken in a pragmatic and systematic way. It is crucial to trace the full picture about alternative or innovative approaches – where they are used, how they are used, and upon what other elements of the system they are interdependent. Are such approaches directly linked to success, or are there confounding factors? Cross-referencing between different jurisdictions can be illuminating, especially if lower-performing jurisdictions are also considered. If the same policy is followed, is it accompanied by similar practice in other aspects of the educational system? How does it work here, but not there?

With sound methodological practice this type of study can contribute to the debate about educational reform, but without it the results can be extremely damaging.

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