

**DIRECTORATE FOR EDUCATION AND SKILLS  
EDUCATION POLICY COMMITTEE**

Cancels & replaces the same document of 19 April 2016

**Transnational Comparative Method Regarding Curriculum**

**3rd Informal Working Group (IWG) on the Future of Education and Skills: OECD Education 2030**

**3-4 May 2016  
OECD Conference Centre  
Paris, France**

*This paper has been drafted by Tim Oates, Cambridge Assessment, as part of the background papers for the 3rd meeting of the Informal Working Group of the Future of Education and Skills: Education 2030, to be held on 3-4 May 2016.*

Miho TAGUMA, Senior Analyst; E-mail: miho.taguma@oecd.org; tel.: +33-1 45 24 92 65  
Tim OATES, Group director of assessment research and development for Cambridge Assessment  
E-mail: oates.t@cambridgeassessment.org.uk

**JT03394336**

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## **TRANSNATIONAL COMPARATIVE METHOD REGARDING CURRICULUM CAMBRIDGE APPROACH**

### **1. Introduction**

1. This paper outlines key assumptions and theoretical bases for the approach to transnational comparison which has been developed by Cambridge Assessment.

2. It is a working paper designed to support the OECD's project to undertake comprehensive transnational curriculum analysis as a means of providing information and support to domestic policy formation on educational improvement, focussed particularly on issues related to curriculum.

3. Cambridge Assessment is a non-teaching department of the University of Cambridge. It employs over 2 400 staff, and operates in over 170 countries. The Group includes three exam boards – Cambridge English, Cambridge International Examinations, and the OCR board. It has the largest assessment research team in Europe.

4. Cambridge Assessment is engaged in curriculum analysis as part of:

- qualifications development and provision
- development of ancillary materials such as textbooks and digital resources
- reform and development support to various jurisdictions
- support work to UK Government on the National Curriculum
- transnational comparative work on the performance of education and training systems

5. In 2010, Cambridge Assessment provided support to the review of the National Curriculum. Tim Oates chaired the Expert Panel furnishing advice to the Secretary of State. Cambridge analysis provided much of the starting points for the development of the new National Curriculum (and its assessment) and this included insights from transnational comparisons.

6. We believe that much transnational analysis or putatively transnationally-focussed has been fundamentally defective. We differentiate:

- parallel description – interesting but so what
- policy borrowing – theoretically deficient
- analytic transnational comparison – a basis for action

7. But we also assert that transnational analysis does not supply 'judgement-free policy formation'.

8. We also remain concerned that transnational analysis of curricula is used as spurious legitimation for domestic action, including the general sense of 'manufactured fear' that other nations are doing better than a home country, something which is explored later in this paper.

## 2. The purpose of the OECD activity

9. We believe that there is a great deal to gain from sophisticated transnational comparison, but that the operation of educational arrangements within each jurisdiction operates through different, and distinctive forms of interaction between all key factors at play in that jurisdiction. This is a well-theorised position, with the theoretical bases for this outlined later in this paper. This places a limit on *policy-borrowing*, but – following the tenets of David Raffe – far less of a limit on *policy learning*. This does not mean that common aspects of learning and schooling, connected to high performance, do not exist. Some categories of explanation of attainment, equity and enjoyment appear to apply very widely across different jurisdictions.

- At system level, empirical and theoretical work suggests that curriculum coherence is a powerful explanatory concept (Schmidt & Prawat)
- At all levels, teaching quality appears fundamental (Hattie, Alexander), with attendant issues of initial teacher training, continuous professional development, and teacher supply
- Early years learning which possesses balance between cognitive and social & emotional development appears superior in outcomes (Sylva & Taggart) – early reading, and exposure to complex language appears fundamental in early years and the first phases of formal schooling (Mellanby)
- High levels of assessment which is integrated into and with instruction appears essential to outcomes [Black & Wiliam; Crehan (forthcoming)].
- High quality resources and materials have been associated with periods of sustained improvement (Oates)

10. But it remains the case that even with the commonality of ‘coherence’, very different forms of education can deliver high attainment, high equity and high enjoyment. For example, the responsibility for school pupils’ emotional and social development can be distributed in very different ways in different systems, and supported by very different constellations of policy instruments. The behaviour of young pupils (classroom order) varies significantly between different jurisdictions (as a result of a series of factors, many of them cultural) and so the expectations (standards), level of activity directed at this, the nature of policy instruments, and the role of different actors and levels in the system in ensuring good order, all vary significantly from jurisdiction to jurisdiction.

11. Cambridge Assessment has outlined key **control factors** (those things amenable to policy) and **explanatory factors** (those things which explain the nature of arrangements but which is less amenable to direct policy action) – our own analysis highlights the unique interaction of these in specific jurisdictions. This is accompanied by further important theoretical and practical considerations: Critical Realist perspectives suggest necessarily complex unfolding of the trajectory of development of arrangements in each jurisdiction, and thus limits on both the task of generating common explanations of performance and common policy action and instruments.

12. The anxiety in transnational comparison and international support for reform is that insensitive imposition of partial solutions in specific jurisdictions will effect disruptive change rather than beneficial change. Even if the project is limited to policy learning, the provision of information for the purpose of educational reform is morally loaded and practically loaded – since, according to a Critical Realist perspective, any introduction of new ideas and new thinking can itself transform action and arrangements.

13. This is NOT arguing for an ‘isolationist’ notion that each jurisdiction needs to develop its own, entirely hermetically-sealed arrangements. We believe that there is much to be learned from transnational comparisons, and that some aspects of human endeavour include the need for common, transnational elements of education and training arrangements – e.g. movement for the purposes of study and work requiring processes of recognition. But we are arguing for an avoidance of insensitive explanation of effective education and insensitive domestic policy formation. We have drawn attention to the distinctive and important approach in Germany, where Dief plays a key role in evidence-based policy formation, and provides a mediating institution between data from international surveys and domestic policy formation.

### **3. Identifying high-performing jurisdictions**

14. The National Curriculum review drew on insights from high-performing systems, and adopted careful criteria for the identification of jurisdictions for study. Cambridge Assessment continues to approach this as an important area of method:

- comparing performance across PISA, TIMSS, and PIRLS, rather than reifying one survey alone
- respecting ‘time lag’ issues in transnational surveys; recognizing, for example, that PISA participants are 15 years’ old, and thus inferences need to be made about the system as it was when they were educated, not as it is today. The recognition of the ‘time lag’ issues led to Cambridge Assessment, in conjunction with CMRE, to undertake a wholesale review of the popular analysis of Finnish success, developing a very different analysis of the historical origins of their period of improvement leading to the 2000 PISA results, one far better grounded in the historical evidence
- differentiating those jurisdictions which enjoyed sustained improvement and/or high levels of attainment and equity and about whom we have evidence relating to that time, from those jurisdictions which may be viewed as ‘state of the art’ but are only at the first stages of development and/or implementation.  
These latter may be of interest due to the theory, information and models which are informing the development, but are of a different class to the former group, about which we have more certain knowledge

15. For the National Curriculum Review, we selected the following as category 1: of interest due to improvement in performance and on which definitive evidence was available for the period of improvement. Category 2: of interest, either due to current policy development or because of highly specific features regarding quality, but without the form of evidence present in category 1:

#### **Category 1 jurisdictions**

Alberta  
Massachusetts  
Singapore  
Hong Kong  
Finland

#### **Category 2 jurisdictions**

France  
Flemish Belgium  
Scotland  
Australia  
New Zealand  
Germany  
Sweden

#### 4. Defining ‘curriculum’ – acknowledging complex relations

16. Cambridge Assessment has differentiated ‘National Curriculum’ from ‘school curriculum’. It differentiates:

- the intended curriculum
- the taught/enacted curriculum
- the learned curriculum (outcomes)
- the assessed curriculum

17. It acknowledges Hattie’s research, in recognizing that the ‘reality’ of the curriculum is the complex interaction which occurs in individual school settings, between the cognitive and affective faculties of children/learners and the teacher. This does not negate the importance of system level and sub-system level analysis, nor of policy analysis, nor of talking of ‘the characteristics of the jurisdiction’s arrangements’.

18. It uses Eraut’s definition of curriculum:

- aims
- content
- methods (pedagogy)
- assessment
- evaluation

19. Cambridge elaborates this through the following categories:

- Taught curriculum – subjects
- Taught curriculum – cross curriculum elements
- ‘Taught’ curriculum – extra-curriculum elements
- Extra-curriculum elements – guided (school trips etc) and unguided (student clubs etc)
- Institutional participation – student councils etc, learner voice
- Support elements – IAG etc
- Ethos – values and value-driven practices
- Culture – lived experience of the institution

20. It further differentiates cognitive and affective outcomes (Sylva and Taggart; Deakin-Crick) and the empirically-derived ‘personal capitals’ (Schuller and Bynner).

21. It has undertaken study of the governance and scheduling of curriculum evaluation and reform (cf NFER INCA analysis of review cycles in various jurisdictions); and the consequences of specific approaches to scheduling and managing curriculum renewal and reform. Frank Achtenhagen's work on 'cycles of planned failure' is incorporated into this area of enquiry and development.

22. The issue of frequency of change – both what can be inferred from the historical and current frequency of change and any recommendations regarding frequency of change – are discussed later in this paper.

23. This paper includes a strong emphasis on complexity of relations between elements/factors operating in education arrangements, and the co-existence and interaction of varying policy instruments intended to enact the intentions of a national curriculum framework. It also acknowledges that the reality of the curriculum is not simply the sum of the intentions or the impact of deliberate policy instruments. Indeed, the section on Critical Realist perspectives on the curriculum suggests the need for constant fine-tuning and 'correction' in policy management and system governance.

24. It is vital to understand that all national curriculum frameworks are not the curriculum-in-operation. This distinction frequently is forgotten in discourse about education, and the very act of forgetting the distinction can affect the system. For example, in England, by the late 1990s, the dominance of assessment of the National Curriculum – and the high impact of accountability measures tied to the outcomes of assessment - had caused teachers to collapse the ideas of 'school curriculum' and 'National Curriculum'. While OECD theorisation does not make the mistake of collapsing the two – since the work recognised the distinction between a national curriculum framework and the enacted curriculum – the distinction tends not to be adequately sustained in many transnational comparisons. Some jurisdictions have adopted the term 'national standards' – in our view, this term better conveys and preserves the distinction between the national framework of curriculum expectations and the enacted curriculum.

25. Our approach suggests that attention needs to be paid to the full range of policy instruments brought to bear on the system in order to realise the intentions of the national framework. For example, persistence in attention is fundamental to learning (Mellanby, Abadzi) and has featured as an explicit element in some national frameworks at some times in their history. Deliberate control of, and responsibility for, persistence (an element of pupil behaviour) is discharged in very different ways in different systems, and the level and nature of persistence varies according to models of ability dominant in each system (Stigler and Stevenson) and historical development of pupils' self-identity and behaviour. Put simply, the fact that persistence is mentioned in a specific national curriculum framework is not a dependable indication of whether persistence is high or low in that jurisdiction's arrangements – the absence of any statements on persistence may be misleading: powerful cultural mechanisms may be in place; policy instruments and actions other than those associated directly with the national curriculum framework may be acting on learning.

26. Jurisdictions anxious to improve increasingly have considered the inclusion in national frameworks of requirements relating to learning behaviours: learning to learn; values; metacognition, etc.). Inclusion in the framework is one thing. Effecting genuine change in these deeper behaviours of learners is a very different matter from shifting the specific content of learning programmes from one area of discipline knowledge to another. Again, consideration of the actions and instruments by which this can be discharged in learning arrangements is an essential part of effective comparative research.

## **5. National Curriculum frameworks/National Standards – element analysis of form and content**

27. Element analysis – what is in each national framework, what form do the statements take etc – has to some extent become 'standard analysis'. We do not go into different approaches to this empirical

analysis, but the approach which we used in the 2010 review (comparing Alberta, Mass., Hong Kong, Singapore, Hirsch, Finland and others is described at:

<https://www.gov.uk/government/publications/review-of-the-national-curriculum-in-england-what-can-we-learn-from-the-english-mathematics-and-science-curricula-of-high-performing-jurisdictions>).

28. The detail of how things are stated and what things are included is, of course, vital. This ‘textual’ analysis of ‘elements’ has been enhanced by high quality ‘category’ analysis using the concept of ‘construct’: of what nature are the things being described as the focus of learning?

29. In the light of our 2010 analysis, the category-level analysis of elements can include:

- Concepts
- Principles
- Fundamental operations
- Core knowledge
- Values
- Dispositions

30. By using contemporary epistemological theory, our framework for analysis did not accept any simplistic distinction between ‘knowledge’ and ‘skills’. ‘Reading’ is a skill. ‘Observation (in science)’ is a skill. ‘Observation’ is theory-laden, crammed with knowledge. We acknowledge that different framework can place a different emphasis on elements of knowledge and skills (including application – both its extent and its type), despite this lack of absolute separation between the two.

31. Transnational analysis must be sensitive to:

- the ‘language set’ used for description – including ‘conceptualisations’ and the specific forms of expression of core content (i.e theory-laden language)
- the level of granularity
- degree of implicit and explicit pedagogic prescription
- the nature of ‘progression’
- the age-relatedness/age-location of specific content
- ‘embeddness’/cross-curriculum elements
- forms of contextualization and illustration
- exclusions – particularly those explicitly stated

32. The categories of ‘volume’ of material (including the idea of curriculum overload) are important in element analysis, as are matters of coherence across distinctive areas of the curriculum (an archetypal example being the language and maths requirements for the same age of pupil being incoherent or coherent across different subject).

33. The notion of progression also is critical (for example the commitment to a spiral curriculum in some jurisdictions). What continues to emerge from transnational comparisons – informed by data on the pattern and level of attainment in specific outcomes – are unusual patterns of conjunction of requirement – for example where operations in maths are tackled simultaneously in some jurisdictions, whilst being spread across a number of years in others. This empirical work continues to throw up important instances which hold potential for curriculum refinement across many settings.

34. What we maintain is that this ‘element’ analysis only becomes powerful when the principles, aims and models driving the precise form, content and arrangement of content are explored and made explicit. This allows effective scrutiny of the integrity of, and evidence for, the specific approaches used in specific settings. Very quickly, this scrutiny of ‘underlying assumptions and models’ begins to engage with models of ability, models of learning, and models of progression. It is our contention that any analysis which does not engage at this level will necessarily fall short of solid and sound transnational comparison.

## **6. Curriculum and assessment reform – frequency**

35. Reform and transformation of education reduces capacity in the system during the time of change. As teachers and managers work to understand and adopt new working processes, this uses time and resource re-directed from existing practices into new processes. New processes may have distinct advantages and assets, and may address known, persistent problems of existing arrangements, but it is vital not to underestimate the impact of transformation. For example, modelling of possible transitional challenges was not done in a variety of initiatives – such as the implementation of ‘levels’ in English assessment practice, and the implementation of the reform of A levels in 2000 – and considerable problems arose as a consequence.

36. Our work comparing the improvement trajectories of different jurisdictions suggests that while a majority have implemented new national curricula or frameworks of standards, only some have had sustained periods of improvement. This introduces considerable complexity into the question of ‘what is the correct frequency of change in national curriculum frameworks?’ We do not think that the ‘ten-year rule’ resembles any form of ‘natural law’, and the tendency towards a ten-year cycle may be very misleading as to both cause and legitimate action. Rather than just accepting that a ten-year cycle is common, we should ask searching questions as to why this is the case, and the integrity of the underlying rationale for change – in each and every case.

37. Cambridge has argued that it is vital to ensure that national curricula only change when there is a fundamental shift in foundational knowledge in key disciplines. Research by INCA at NFER suggests that nations change their national curricula, on average, every ten years. It is important not to reify this figure – it simply is an average of existing ‘habits’ in curriculum renewal; it does not fit, for example, which the frequency change in fundamental paradigms in key disciplines, which typically have occurred much less often than this. Cambridge has highlighted the error of confusing ‘concepts’ and ‘contexts’ and has argued that a national curriculum should focus on a parsimonious listing of key concepts, principles, fundamental operations and core knowledge – not on the contemporary contexts and settings which teachers might use best in teaching and learning around these concepts – this is the now widely-recognised ‘national curriculum’ – ‘school curriculum’ distinction. We would argue that national curricula have been changed more frequently than necessary, with the key imperative being a change in the content of foundational knowledge in key disciplines. Additional impetus to change may come from research – for example on

reading, on sequencing in maths, etc – but this is likely to be discipline-specific, and not warrant wholesale curriculum revision across all subjects. This highlights the negative impact of unwarranted change in content in national curricula and national assessments. Evaluations undertaken by Cambridge in a variety of settings and countries suggests that governments often seek to address system problems through change to national qualifications and national curriculum, when in fact more effective remedy lies in changing other key elements of arrangements – such as inspection, funding, and/or teacher training. One reason for this is that national curricula and national qualifications are relatively easy to change, in contrast to other ‘control factors’ in arrangements. Easy to change, yet the washback effects can be unpredictable in precise effect, and the transition costs exceptionally high.

38. We would argue that change in a national curriculum or national assessment (including examination) should be relatively infrequent, always research-based, and its implementation carefully monitored. Cambridge has examined the processes of change over time in various national curricula and frameworks of national standards, and laid down the research-based principles for the revision of the National Curriculum in England. The work indicated that change in discipline content tends to occur within individual subjects, and this further introduces a rationale for incremental rather than wholesale change in national curriculum frameworks. The principles also highlight the fact that change in sciences and maths can affect one another, where one subject demands a foundation of concepts or operations from another. Such change is less disruptive than wholesale, regular change across the whole of the national framework. If the national system is exhibiting wholesale weakness, due to poor design, or accumulated problems deriving from pressures outside the framework, then there may be a case for total framework review. But historically, such total review has been conducted more frequently than genuinely is necessary, with negative consequences for capacity and resource.

39. This leaves us with an interesting analytic framework for examining change, which is based on the key notion that there may be a range of causes for change in content. Only when the range of causes is identified in each can there be scrutiny of the legitimacy of each change:

- internal domestic shifts in social/economic/political/moral priorities
- changes in the structure and content of knowledge within disciplines
- evaluation of the performance of domestic arrangements
- shifts in views about educational priorities
- emergent research on effective pedagogy and effective education
- shifts in funding available to education

40. But of course these mix in interesting ways in different national contexts – it is clear that data from international comparisons have been used to legitimate domestic action in ways which are not supported directly by the data themselves; a form of ‘manufactured fear’ which has been well-theorised in relation to defence strategy. This manifests in statements such as ‘...we must do this because these other nations are out-performing us...’, which can become a legitimisation of the existing control arrangements in that jurisdiction with little connection to actions which genuinely are linked to sophisticated consideration of effective improvement strategy.

41. The complexity of effecting change in learners’ behaviours suggests that national curriculum frameworks may be effective in signalling changed priorities but being only a small factor in the total constellations of actions and instruments needed to effect genuine change. We believe that concepts of

‘core knowledge’ and ‘powerful knowledge’ – and the recognition that constructs such as ‘conservation of mass’, ‘metaphor’, ‘turbulence’, ‘electrical charge’ – are enduring, powerful constructs of great longevity, and have remained highly explanatory of difference in educational outcomes. ‘Core knowledge’ and ‘powerful knowledge’ should be central to consideration of balance and focus of curriculum frameworks, and necessary change in these (as a result of the infrequent paradigm shifts which occur) should be distinguished from the contingent frequency of change which has tended to occur in frameworks, and have their origin in a wide range of factors unrelated to the structure and content of knowledge. We are not reducing change simply to change in the content of disciplines, since it IS necessary to respond to social and economic changes; and is IS necessary to respond to research on effective pedagogy and evaluation of effective education. But we are arguing that these often have been confused, both in research and in policy formation.

## **7. Curriculum coherence and curriculum control**

42. Cambridge Assessment’s analysis of arrangements in specific jurisdictions draws on Schmidt and Prawat’s work on ‘curriculum coherence’ and ‘curriculum control’. This emphasises the fundamentally interconnected relations between different curriculum elements, governance and policy, and other factors. This has been elaborated by Oates into 14 ‘control factors’. These are aspects of arrangements amenable to deliberate policy action – assessment, funding, accountability etc. These are contrasted with ‘explanatory factors’ – such as historical and cultural legacy, economic circumstances etc.

43. The two aspects of Schmidt’s ‘coherence’ model (curriculum sequencing and factor interdependency) are mobilized in the work.

44. This notion of ‘coherence’ as interrelatedness of factors has led to a specific analysis by Cambridge Assessment of the role of educational resources, ranging from traditional textbooks to digital resources.

45. It also includes accurate characterisation of the legal status of different instruments of coherence and control, including the obvious statements of national standards/national curricula.

## **8. Grand Theory - Critical Realism**

46. Cambridge Assessment uses a Critical Realist ontology to explain the operation of social systems (Bhaskar, Sayers). This incisive work on differentiation of method in social and natural science, respectively, has high explanatory and causal power, delineating the limits on predictive power in social systems. This provides a powerful means of explaining the trajectory of development in education and training arrangements – essentially the operation of tendencies rather than laws. This holds important implications for explanation, for policy formation and for policy enactment.

47. For method and for policy formation, a Critical Realist perspective suggests:

- No perfect knowledge
- Multiple sources of weak evidence
- Necessary eclecticism
- No reification of single sources including the outputs of transnational surveys

48. I will not go into further detail in this paper, save to say that – combined with careful use of domestic and international survey data - Critical Realist theory has been instrumental in yielding powerful explanations of the nature of educational change in various settings, including throwing light on the important role played by processes of social consensus and key ideas about education – these are structural in character, not merely contingent.

## **9. The need for multidisciplinary approaches**

49. During the National Curriculum Review, and for subsequent transnational curriculum analysis, Cambridge Assessment guided the collection of national curriculum specifications, their curation, and comparative empirical analysis.

50. The comparison for the National Curriculum are described extensively in two DfE reports, both available on the DfE website:

<https://www.gov.uk/government/publications/review-of-the-national-curriculum-in-england-what-can-we-learn-from-the-english-mathematics-and-science-curricula-of-high-performing-jurisdictions>

51. Comparison at ‘construct’ level (concepts, principles, fundamental operations and core knowledge) was supplemented by emerging research on ‘learning progressions’ – this latter work is only emergent in certain subjects (languages, science, maths) and is incomplete even in those subjects.

52. The complexities of relations posited by empiricists such as Schmidt, Raffe and Green, and by Critical Realist perspectives suggest the importance of both structural and detailed contextual knowledge:

Stories – narrative – vital detail

Cause – interactions – essential relations

Extrapolation – tendencies – imperfect knowledge: limits on inference that necessary effects will follow

53. To facilitate effective understanding and explanation of tendencies in specific national settings, Cambridge Assessment has developed extensive domestic links in a range of jurisdictions. The detail that these links provide are a vital adjunct to higher level data-driven analysis of arrangements and trajectories.

## **10. Culture and ideas about education**

54. Cambridge Assessment acknowledges the importance of cultural factors in determining the operation of education arrangements and determining patterns of participation, engagement and outcomes (Alexander). Its work has highlight the crucial role of ideas about attainment, progression, ability etc and their formative role in arrangements. However, we agree not only that culture and ideas are important in explanation of the operation of arrangements, they too can be the object of reform strategy and deliberate transformative action (Crehan). This does not legitimate naïve ‘policy borrowing’ but does suggest a dimension to reform strategy which frequently is omitted from policy formation.