

This paper was originally given on Dec 4, 1993 (Saturday) Time: 9:30 - 11:30 am Venue: Room 306 Runme Shaw Building, University of Hong Kong. I have made some slight alterations and included it to indicate the historical processes (as experienced by the author) involved in reaching our current position.

Then the article was published as:

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This article is being resubmitted.

ABSTRACT

Australia has been trying hard to establish a National Curriculum over the last five years but up to now a final consensus has still not been reached. What issues and problems were encountered? Why are there such issues and problems? What measures have been taken to tackle these? What further developments are likely? In the seminar, I will address these questions making use of my experience as a science educator working in Australia and I will also make comparisons, where necessary, with the science curricula of other countries. The case of the United Kingdom is interesting as it was able to introduce a National Curriculum comparatively early, but it has proved to be contentious with frequent revisions.

It may be of interest to add a postscript as of 2011, as the issue of a National Curriculum has been revisited with a greater degree of agreement than in the first attempt, but the introduction of a National Curriculum still has its detractors.

SCIENCE IN THE AUSTRALIAN 'NATIONAL CURRICULUM'

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ABSTRACT

Australia has been trying hard to establish a National Curriculum over the last five years but up to now a final consensus has still not been reached. What issues and problems were encountered? Why are there such issues and problems? What measures have been taken to tackle these? What further developments are likely? In the seminar, I will address these questions making use of my experience as a science educator working in Australia and I will also make comparisons, where necessary, with the science curricula of other countries.

THE ISSUE/ PROBLEM

This paper will consider the science portion of the proposed National Curriculum in Australia in the light of general principles for the construction of curricula, considering the examples of Australia and of other countries in the world. A curriculum consists of those sets of knowledge and skills that the older generation believes that it is essential to pass on to the younger generation of some given age group. Curricula in most subjects thus vary very considerably, though in science there may be less variation of opinion than in many subjects. This is because science is built up from a basis of observations, which are largely, though not entirely, independent of the place in the world that the observations are made. The main feature that accounts for differences in science curricula is probably the very rapid expansion of scientific knowledge, which means that different national systems have to choose which parts and what proportion of all science need be taught to children and at what age it should be taught. In addition there will be differences in curricula due to there being different aims, which can vary between the hard-nosed attitude of educating a scientific elite for a country's rapid economic growth to a softer view that the whole population should have some scientific knowledge as it is a part of a general human culture. There are also choices dependent on political system and national temperament as to whether the total curriculum is the same throughout a country (i.e.- strong centralisation) or whether it varies by state, region, local education authority (l.e.a.) or by school or by the teacher (decentralised systems).

In 1978/9 I was undertaking a Masters in Educational Administration at Oxford University Department of Educational Studies in the United Kingdom. The then Prime Minister, James Callaghan, raised the issue of the ownership of the curriculum in terms of a metaphor of 'walking in the secret garden of the curriculum' and 'having the key to secret garden of the curriculum'. It is unusual in Britain for education to make newspaper headlines, but there was then considerable debate about some sort of government intervention in the control of the curriculum. At that stage the ownership of the curriculum could be said to be shared by the local education authorities, the unions, the examination boards and central government through Her Majesty's Inspectorate. However the scene shifted as the headlines were stolen by Britain's economic malaise 'the winter of discontent' and conservatives, who at that stage did not believe in any centralisation of the curriculum breathed a collective sigh of relief that the socialists had been kept out of the 'secret garden of the curriculum'. It is somewhat ironic that it was the conservatives almost a decade later who forcibly occupied 'secret garden' and created a National Curriculum. I will leave the UK situation now with the comment that the UK National Curriculum was carefully introduced (DES,1989) and that there was some enthusiasm by teachers for its introduction as it contained many features of science that were being omitted from school science e.g. - attainment Target 17 (The nature of science). I also believe it to have been of some assistance in increasing the emphasis on science, particularly in

primary schools, though many teachers consider that its very tightly controlled nature and complex assessment procedures have made it a bureaucratic nightmare for those who actually teach in the system. In fact, there were so many difficulties that a new version of the UK National Curriculum had to be introduced two years later (DES, 1991) and unfortunately a number of items that gave breadth and perspective to the course, such as Attainment Target 17 were omitted or reduced in scope in the revision.

In Australia, we are currently involved in the 'Mabo' debate, which is about the Aboriginal ownership of land in Australia. Up until a High Court judgment last year there was a legal view that Australia was 'Terra Nullius' prior to white settlement 205 years ago. That view is that Australia was an empty continent in 1788 with no one living there in spite of the drawings, writings etc that fully describe the fact that the continent was inhabited at that time. I make this point to introduce a second metaphor in which I liken the Australian National Curriculum, not to a 'secret garden' but to 'Terra Nullius'. I do this because I consider that although there are many claimants to the ownership of the curriculum, at this time there is no real ownership. That is it is empty land that is there for the taking, if anyone party pushes hard enough.

WHY THE ISSUE/ PROBLEM EXISTS

In comparison with other countries, Australia has a small population base (circa 18 million people). This population tends to be concentrated at the south-east and south west corners of a large continent, but again in comparison with other countries the population is mobile, with people frequently moving town or state. Children of families that move, such as those in the armed forces, are disadvantaged if curricula are too diverse. In Australia, education is a state responsibility at primary and secondary levels, so different states have different curricula in each subject and in some states curriculum responsibility has been devolved to the schools. This is really the nub of the issue, because only the States under the constitution have the power to say what should be taught in schools in their particular state. The Federal Government has no power to compel any change in the curriculum: nonetheless the states are perpetually short of money and will very frequently accede to Federal Government requests, provided that the Federal Government pays. Thus much of the argument in this area is political, with the specific aim of extracting more money out of the Federal Government, so much of the debate about this area is political rather than educational. The next difficult is that the eight States and Territories all have different agendas. This is partly about whether they happen to be Labour, like the Federal Government or Liberal like the Opposition, but the agendas are also different due to the degree of centralisation within the state. Some states would find it very difficult to tell schools what they should be teaching, as they have already devolved this power to the schools, whereas other states still have centralised curricula. The overall situation remains far from clear as things are at present, but also in terms of what will eventuate.

There are also questions of content, which are not overtly political, in a party political sense, but which are generally reflections of public sentiment. One of these tendencies is a new sense of nationalism in-Australia, where educators want to teach about what is happening in Australia in their subject. For example, mining and Australian flora and fauna would certainly be a part of any National Curriculum. If one saw Australian curricula of the 1950s and 1960s as being very similar to the UK curricula of the same period, one could then picture the curricula as diverging, partly because of the greater regard for examinations in the UK (Australia has no real equivalent to 'O' Levels), and partly due to Australia creating its own science curriculum materials- that is 'The Australian Science Education Project (ASEP)'. ASEP has been very influential on the science taught in Years 7 -10 in Australian schools. The

story of ASEP is told elsewhere (Cohen & Fraser, 1987; Fraser, 1985). ASEP produced over 100 different titles, which schools usually bought as class sets. The books were small and in paperback, but colour printed, and written in simple language and making few demands on expensive equipment. They were not very demanding in terms of conceptual level. Above all they were easily available and a home-grown product. They were very different from the UK produced Nuffield materials, which were generally conceptually demanding and required expensive equipment. The paths have now diverged considerably, with UK on a high level, high cost, elitist path and Australia on a low cost path making science available to all. Also because of the large number of available ASEP titles, Australian schools made different curriculum choices, which means that there is little uniformity of science education up to Year 10. In Years 11 & 12 there will also be wide variations of practice as not all states have Year 11 & 12 examinations and those that do, have wide variations in content.

After the 1988 Hobart Declaration, all major subject areas in the school curricula were mapped and compared for similarities by subject advisers from the different states. The mapping of the curriculum was completed in June 1990 (Anon, 1991, Dec). Each subject area was asked to come up with an agreed statement to form the basis of a National Curriculum. There was to be consultation with the wider community at all stages. The remainder of the paper is the story of the progress to this agreed statement in science. I should say that I have had no major part in this process, though I have been one of many hundreds of people, who have been asked to comment in detail on the various drafts of documents that have been made available for discussion.

MEASURES TO BE TAKEN IN RESPONSE TO THE ISSUE/ PROBLEM

In 1988 there was an abortive start to the process, where for the bicentennial a document *Science for everybody: towards a National Statement* was produced, but no funding was allowed for analysis of the questionnaires sent out, so nothing further happened.

In May 1991 the first draft of a document *A National Statement on Science for Australian Schools*, was circulated for consultation. It is perhaps interesting to note that the composition of the committee, which drew up this statement, was of experienced teachers and science advisers, who were on loan to the National Committee, but who were not senior administrators. This first draft received some criticism but was generally favourably received by the science teaching community. I commented in the questionnaire that accompanied the document that the task that was originally set by government was far from clear. By this I meant, that it was never really decided whether the final curriculum document would or would not be implemented Australia-wide. This initial lack of clarity has now come back to haunt us, but I believe that most of those involved in the exercise thought that the final document would greatly increase the degree of similarity of science curricula across the country.

In December 1991, a completely different National Science Curriculum emerged, quite unlike its predecessor. My comment on this was:-

I have before me 3 different documents which represent three stages in the process of producing the National Statement on Science for Australian Schools. These are (i) *Science for Everybody: Towards a National Statement* (1988) (ii) *A National Statement on Science for Australian Schools: Draft of first stage of document* (May 1991) & (iii) *A National Statement on Science for Australian Schools: Complete consultative draft* (6 Dec 1991). The problem is that they are not progressive stages in the development of science curricula. They are completely different documents based on different philosophies of education favouring very different methods and outcomes. I would call (i) the politician's science: it aimed to please

everyone; (ii) is the educationalists' science saying virtually nothing about the content of science to be taught, but strong on egalitarian principles; (iii) is the scientist's science which is a hard-nosed science using words like policy, productivity, and knowledge. The only ways of making relative judgments between these different 'animals' is by prior ideology and one fears that at this point the debate will cease to be constructive.

Surprisingly this document, which was produced on the instructions of State Directors of Education and which might be considered 'reactionary', did not last. It has in the end been replaced by a new draft (AEC & CC, 1992, Oct), which is much closer to the May 1991 document and the final draft of this is now available (AEC & CC, 1993, June). Additionally a working document called a National Profile (NSP, 1992, Sept) for science has been produced. The first draft of this document produced in September 1992 was abysmal in terms of quality, with errors in terms of spelling, presentation, content and degree of completion. I wrote at length, slating this document, finishing with a final point (No. 11) which summed up my opinion of that document.

(11) Previously I had glanced through the material and it had seemed OK. Last night I tried to read what the profile actually said from the point of view of a teacher who is using it to know what and how to teach. Reading it critically I decided that it was not very good. NO! let's be honest it's AWFUL. It can not go out as a national document like this! I am sorry that this sounds like an 'ad hominem' attack. It is not meant to be. The authors have set themselves (been set ?) too difficult a task. I realise that the parts given are only examples, but even as exemplars I am not sure how helpful they would be to existing teachers. I will explain misgivings in detail later but in general my problem is with the outcome statements. Often these are not stated clearly, so that it is possible to misunderstand what the outcome should be or what outcome is intended. Most need to be split into several sub-statements of outcome to ensure clarity. Outcome statements are going to be the keys to the secret garden of the curriculum, so they have to be right.

There is now an improved version of this document, which should assist teachers in following a National Curriculum and of which I have no major criticism. A final version of the National Science Profile is due any time now and should contain few surprises.

FURTHER CONTROVERSY

In July 1993 the Ministers of Education from the states met again, but rather than give some positive endorsement of the National plan, they passed a resolution accepting the work done, but indicating that each state would take the recommendations back to their Ministries of Education and implement only those parts they felt would be useful to their particular state. In the Northern Territory where I live it is almost certain that the Ministry of Education will implement the National Curriculum more or less intact. The feeling is that it is not vastly different from what already exists, so minor changes will take place without major disagreements. However the NT is a small state in terms of population and already has in place a centralised and agreed curriculum, so it will be easy to implement the National Curriculum. Other states have different systems and different problems. In particular, Victoria and Western Australia have recently objected to the idea of a National Curriculum. My own view is that Victoria, because of the comparative freedom that schools have there to implement their own curricula would have genuine difficulty in changing to a National Curriculum, whereas I think that in the case of Western Australia, that there are probably not major difficulties. A headline in a national newspaper stated that 'Minister defends Victoria's stance on Education'. The minister there claims that implementing the National Curriculum as it is would lower the quality of education in Victoria and he quotes the views of 300 tertiary academics

(mathematicians and scientists) who have reservations about it. Other headlines state 'National school plan languishes in Limbo', 'Academics greet delay of single Curriculum' & 'Curriculum Plans a Joke: School Reformer'. Without going into the details of these headlines it can at least be seen that there is now a measure of disagreement about a National Curriculum that the media have reported upon. In contrast to this, I have found that those actually involved in working out the details of the National Curriculum consistently deny that there is any disagreement (It's all a media beat-up, they say), and simply continue with their work. A recent paper by Malcolm (1993) for example takes just this view as he concludes his paper with the words.

The documents will shortly be available to everyone, for critique, for use, for further development. Currently the responsibility for further work rests with the states. I encourage you to take part in it. (Malcolm, 1993)

One other point is that the Federal Government had promised \$60 million for teacher inservice: it has now rather cannily modified that promise to providing money to train teachers in the implementation of the National Curriculum, so that Australian States that don't have this aim will presumably be barred from the 'honey pot'.

Academics have been very much a part of this debate with worries about standards and I suppose, about the quality of the intake to tertiary institutions. Two largely opposing viewpoints are put by Fletcher and Lowe (1993) indicating the breadth of view about curricula.

CONCLUSION

Those who believed that a unified National Curriculum would eventuate from this process will certainly be disappointed. Those who are happy with a slightly greater degree of commonality in curricular provision between states than existed prior to 1988, will be satisfied with the results. Since the original intention was never precisely defined, there can be no definitive position as to whether the outcome is satisfactory or not.

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