

The implications of the new National Minimum Curriculum for Science Education

Debbie Chetcuti

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The new millenium has seen the publication of a new National Minimum Curriculum. This new curriculum offers a number of challenges to all educators. One of the main challenges of the new NMC is without any doubt in the area of “Science Education”. As stated in the NMC “Among the recurrent challenges that the curriculum must strategically address are: developments in science and technology, the ability to make use of the recent developments in these areas, digital processing of information and knowledge; developments in the cognitive sciences...” (p. 21). The philosophy encouraged is that science forms part of our daily lives and that all individuals should be prepared to respond to the realities and challenges of science in our daily lives. This is the idea of scientific literacy which is defined according to Koballa, Kemp and Evans (1997) as the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs and economic productivity. As Bybee (1993) argues as citizens, individuals are called on to evaluate the uses and consequences of science and technology. They must decide whether to help establish public policies as much as their knowledge and skills do. This can only be obtained by having a broad and balanced grounding in science.

How does the NMC propose to ensure scientific literacy?

One of the main aims of education is to prepare individuals to lead personally fulfilling and socially responsible lives. As Black (1993) argues, given the large and growing relevance of science in the private, social and political spheres, the optimum planning of a science experience is of utmost importance. For the majority of students science is part of a general education and here science enables students to develop the skills necessary for them to be able to think for themselves, solve problems, and participate in the decision making of the society to which they belong. For other students science is the stepping stone to a profession in the field of science. The same science curriculum therefore needs to provide the first stages for a training in a science career

for the minority as well as a broad overview of the basics of science for a majority of the students. This can be achieved through a broad and balanced overview of science at secondary education and further specialisation in specific science subjects at a later stage.

The new NMC is therefore suggesting the introduction of Co-ordinated Science as a subject in secondary school. The idea is for Co-ordinated Science to replace the existing specialisation in this area of the curriculum. “Co-ordinated Science includes themes from different branches of science, technology, nature studies and applied Science” (NMC, p. 81). The idea is that:

In establishing Co-ordinated Science as a basic subject from Form I until Form 5, the curriculum ensures a more widespread knowledge of science. This should lead to more students choosing scientific subjects at post secondary level (p. 81)

The Philosophy

In principle the idea of Co-ordinated science is an important move towards the development of individuals who are scientifically literate. A broad and balanced science will lead students



DEBORAH CHETCUTI has a B.Ed (Hons.) (1989), an M.Ed in Curriculum & Instruction at McGill University, Montreal (1992), and has recently graduated Ph.D in Education from the Nottingham Trent University. She is a lecturer in the Faculty of Education, University of Malta.





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to an understanding of science which is process rather than content based, crosses the boundaries between the separate ideologies and creates a co-ordinated science which is rich, authentic and context based. This as argued by Bybee (1993) will result in students developing a number of attitudes, skills and knowledge as well as having acquired certain personal and social habits.

The Challenge

The philosophy behind introducing Co-ordinated Science is an excellent one but the next step, how it is actually going to be implemented is even more crucial. While most teachers would agree with the idea of Co-ordinated Science in principle since it is important for students to get as broad an idea of science as possible to enable them to deal with science in their lives, the idea has also raised a number of questions. First of all it is not clear what is actually meant by Co-ordinated Science? Does Co-ordinated science mean keeping the three sciences but simply teaching them as a single subject? Does Co-ordinated Science mean a complete change and therefore a completely new curriculum based on themes needs to be developed? Another thought which needs to be considered is who will teach Co-ordinated Science? Will a graduate of a single science subject be able to teach Co-ordinated Science? Will there be a need for re-training? Is there space for team teaching? How will Co-ordinated Science prepare students who wish to specialise in science? Will the separate subjects still be

taught as an option at secondary level? These are all questions which still need to be resolved and there is no actual solution offered by the NMC itself. What the NMC does say is that:

For this to occur, the post secondary institutions and the University of Malta should reform their programmes. Until this agreement translates into concrete reality, the Education Division will persist with the system of specialisation in Science that starts at Form 3 (p. 81).

This is of course only a makeshift solution and work needs to be started on taking up the challenges of the new NMC and making Co-ordinated Science a reality. The danger of such a suggestion is that the idea of Co-ordinated Science remains just that – an idea and we will stick to the status quo. A great deal of work needs to be done to ensure that the dream of Co-ordinated Science becomes a reality.

Of course most of the ground work will need to be carried out by a special committee set up to work on the introduction of Co-ordinated science. But what is more important is the involvement of all science teachers in schools. Science teachers need to get together even if in small groups and air their views. If the introduction of Co-ordinated science is to be a success it has to be based on dialogue and collaboration between all individuals, members of University, Education officers, subject coordinators and most important of all teachers. This is an exciting challenge which needs to be taken up by everyone. In my view to limit the role of the teachers in the development of Co-ordinated Science would be a grave mistake. It is the teachers who will teach Co-ordinated Science and it is the teachers who will guide the students through the processes of science. Therefore in order to develop a new curriculum for Co-ordinated science which will be successful and ensure that all students develop their best potential in science the involvement of teachers is an essential and powerful tool. As stated by Bybee (1993), “citizens have a genuine need to understand the impact of science and technology on our society and the social issues they must evaluate. Educators have the responsibility to meet this public need” (p. 84). This is the challenge which the new NMC is putting forward to all science educators.

References

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