
Editorial

Science Education in Malta - into the 21st Century

Welcome to the second issue of Xjenza. This issue is dedicated solely to the Proceedings of the Malta Forum for Science Teachers which was held between the 16-18 September, 1996. This Forum was organised by the Malta Chamber of Scientists in collaboration with the Faculty of Education and the Faculty of Science from the University of Malta, and the Education Division. There were three British Education Consultants invited to take part in this Forum, namely Dr. Susan Tresman and Ms. Elisabeth Whitelegg from the Open University, and Dr. Jan Harding. These speakers were guests of the British Council and I would like to take this opportunity to thank the British Council for their sponsorship, without which it would not have been possible to hold this event.

The problems facing science education in Malta need to be articulated and solutions proposed now if we are going to be heading into the 21st century with a defined long range science policy which makes sense for Malta and which is the object of a national consensus. The aim of the Science Forum was precisely that. Identifying the problems involved in science education is the first and most important step in this exercise.

The crucial problem to be addressed is "Why do so very few students opt for the sciences in our country? What is it that puts students off the sciences at such an early age, which as things stand in Malta at the present time, is the determining factor in the choice of a career?"

Let's start by looking at science in primary education, or rather the lack of it. The importance of compulsory science teaching at primary level cannot be overlooked. Science should be made part of the core curriculum for 7 to 18-year olds. If science is introduced early enough then it will be possible to introduce a culture of science in our youth. Teaching science that is fun, that is related to everyday life, that generates interest in students and thus imparts lasting enthusiasm for the subject which would encourage them to further their scientific studies beyond post-secondary levels, is of utmost importance.

One of the invited speakers, Dr. Susan Tresman from the Open University, directs the programme of training for teachers of primary science in the U.K. In the Workshop she gave (refer to article on page 33), she talked about the method used for compulsory primary science in the U.K., about the curriculum that has been developed and the way training of teachers for primary science is being

carried out. The Open University in the U.K. is the world's leading distance-learning centre. We need to follow up this established contact. Dr. Tresman showed an interest in advising on changes required to be brought about in Malta if primary science education is to be developed. I am not saying that we should follow the U.K. blindly but there already exists a programme which has been developed after careful research and which can be started immediately after the appropriate training in teaching skills is given to the teachers. The curriculum has also been developed. Perhaps as a starting point, in order not to waste any more precious time, we should get going and if any changes need to be done to make the curriculum more relevant to our islands, then it can be modified accordingly.

But let's make a start, let's not waste more time talking. We have talked enough. Action is now what is required. I believe we should seek opportunities for collaboration with the OU to share the expertise they have developed. Let primary school science be a starting-point. As Dr. Tresman rightly emphasised in her talk in the final plenary session of the Forum, funds are required to be directed towards release time for teachers if the primary science programme is going to work. Teachers need to be given time to work on the programme, away from contact and the pressures of the classroom. There also needs to be a means of validation, perhaps a diploma which needs to be financed as part of in-service teachers' training. We have to encourage the right attitude towards science so that science is established as part of the core curriculum at primary level together with mathematics and other subjects.

Introducing compulsory science, rather than compulsory physics at secondary level only, will serve to improve science literacy in the next generation. In the context of compulsory science, should we be looking at an integrated or rather a broadened and balanced science subject or should we stick to the rigid divisions of Chemistry, Biology and Physics? A possibility would be for all students to do compulsory science at secondary level, while Chemistry, Biology and Physics would be studied by students who favour a science-related career.

The very wide curriculum content of science subjects taught at secondary and post-secondary level in schools is resulting in overloading and therefore cramming and is making the learning of science in our schools very difficult. This should not be the case. One should perhaps be talking about altering as well as reducing the curriculum content. There should be less teaching done

in schools but it should be of better quality, in which the thinking and creative skills of the students are brought out rather than their ability to cram (see Mr. Pace's article on page 42).

This brings us to the important issue of teachers' training. The introduction of an integrated science subject, as has been introduced in other countries, would need a reculturing amongst teachers. One would change from being a Chemistry or Biology or Physics teacher to being a Science teacher. This would, of course, entail a change in the way teachers are being trained and requires careful thinking. The introduction of a compulsory science subject at Intermediate-level for entry into University is definitely a step in the right direction, but perhaps the way this is being implemented is not (refer to Prof. Vella's paper on page 44).

Science teachers need to be provided with adequate resources and technical support to be able to carry out their teaching duties well. All schools need well-equipped laboratories where pupils can perform hands-on experiments in small groups from a very early age. More field-work needs to be encouraged. Only in this way can we move away from science teaching purely from text-books to science teaching that is alive and relevant to the world around us. With this aim in mind, there should be more pre-service and in-service teacher training of the right type.

It could well be the language problem that is keeping students from taking up science. The fact that science is taught in English, using text-books that are written in English, does not encourage students to opt for the sciences when the standard of English is falling in our schools. This perhaps calls for some rethinking to be done. Should there be special courses in scientific English given to both teachers and pupils at secondary level and beyond for better communication in English? Since graduate teaching and scientific research is all in English, would it not make more sense to improve the standard of English in our schools, so that students can cope better with any subject that requires a command of the English language?

Another issue is that of gender. Why is it that so very few girls are opting for a science career in Malta? Dr. Jan Harding in her paper (see page 20) mentions that

perhaps "humanising" the teaching of science would attract more girls to the subject. There is also the problem of culture. We keep hearing the phrase "Science is not for girls. It is far too difficult and technical for them. Girls would do better opting for the Arts." How true a statement is that? There is nothing to show, in fact, that girls who opt for the sciences are doing less well than their male counterparts. Again this calls for a reculturing amongst, perhaps, the career guidance experts, parents and teachers themselves, so that girls are encouraged to opt for a career in science. Dr Whitelegg in her article (see page 39) refers to "the traditional unage of Physics which is one that is unappealing to many girls." It is this traditional image of science that requires changing, if we want to encourage more girls to take up a science career.

The final point I would like to make concerns increasing science literacy amongst the people, that is popularising science. Science Week, organised by the Malta Council for Science and Technology in March, 1996, was definitely a step in the right direction. The Malta Science Reports in The Times, which are monthly features edited by Dr. Richard Muscat for the Chamber, are also helping the lay people understand what scientists do in Malta. Perhaps translating these articles into Maltese and featuring them in a Maltese newspaper might be of use to those readers who are not comfortable with the English language. Radio and television programmes on science should also become a regular feature in Malta. Adult science education could be a possibility. We are here talking of tackling the problem of science illiteracy amongst Maltese of all ages. In Britain, great strides are being made in communicating science to stimulate society's comprehension and appreciation of science and technology through the "Public Understanding of Science" initiative. The Malta Chamber of Scientists could launch a similar initiative in Malta, given the appropriate funding and resources. If an effort is made and speedily so, perhaps the picture that will emerge in, say, 5-10 years' time will be one of encouragement and achievement.

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