English and the Science Subjects

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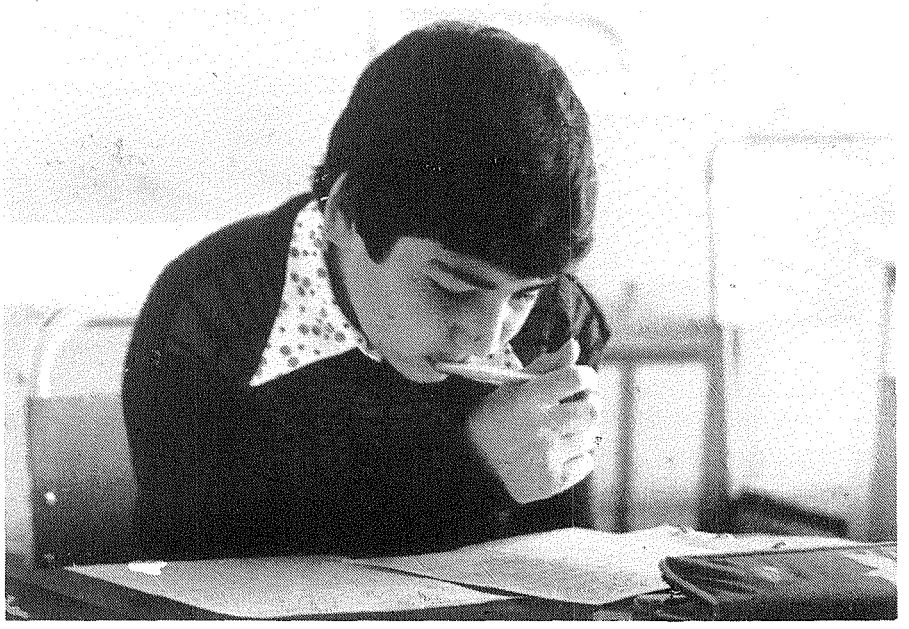


In his paper, 'Sex Differences in Science Achievement at G.C.E. O Level', Mr Ventura refers to an analysis by Falzon and Sammut[1] of the results of national examinations held in Government Secondary Schools in June–July 1975. Much against expectation, they found that girls scored significantly higher than boys even in a subject like General Science. In trying to account for this result, Falzon and Sammut hazarded that one of the reasons for the girls' superiority was their better grasp of English.[2] Such a conclusion would give English a determining role in a candidate's success, or failure for that matter, in subjects where the language is the medium of instruction – of reading and writing and, often, of teacher's explanation.

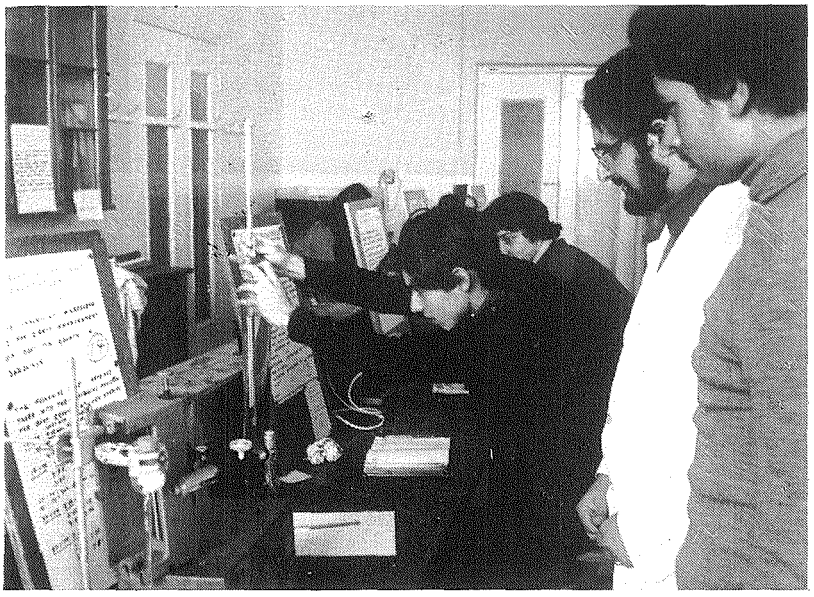
If we now analyse some of the results obtained by D. Mizzi in her investigation of 1979,[3] we shall find further confirmation of the conclusions reached by Falzon and Sammut. (For details concerning D. Mizzi's investigation the reader is referred to Mr Ventura's paper in this issue.)

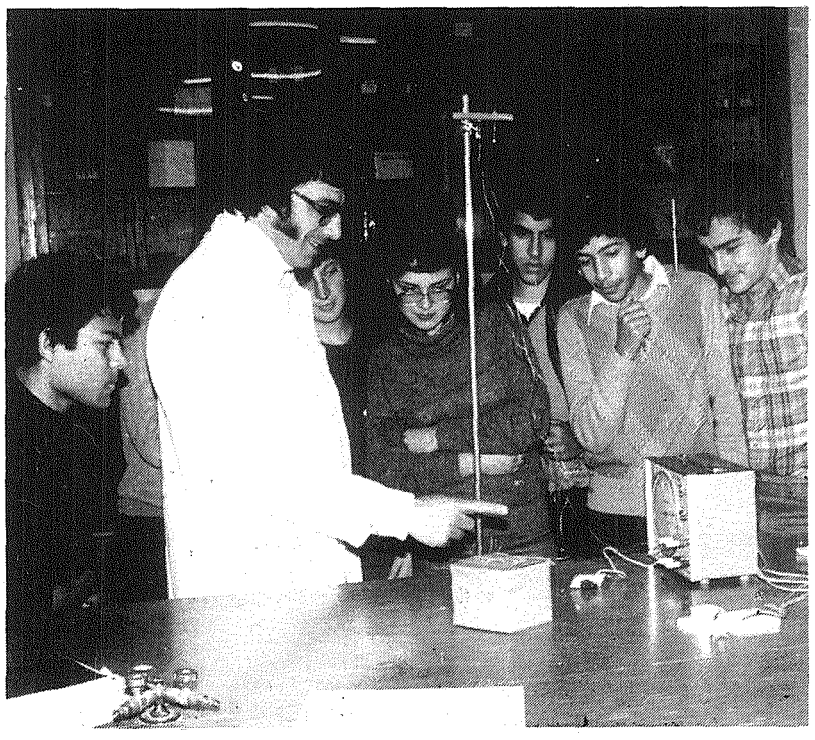
TABLE 1

CORRELATION COEFFICIENTS	
English – Physics	= 0.45
English – Chemistry	= 0.42
English – Biology	= 0.56
N. 80 Boys	379 Girls

This table shows the correlation coefficients obtaining between English and the three Science subjects, Physics, Chemistry and Biology when the G.C.E. 'O' level results of her sample are compared. These coefficients are all significant at the one percent level using a one-tail test of significance, which means that there is more than a

chance correlation between English and each of the other subjects. However, such evidence cannot be taken at this point to lead to the conclusion that a good level of English contributes to success in Physics, Chemistry and Biology. We can only say that a candidate who does well in English will probably also do well in these subjects but we cannot assume that there is a cause and effect relationship here. On the other hand, if we accept the commonly held belief that boys do better than girls in Science subjects, then how are we going to account for the fact that D. Mizzi found that in her sample girls did just as well as boys, if not better, in Biology and Chemistry, falling back only in Physics? What enabled the girls to do so well? Or turning the question round: What held back the boys?





It will be recalled (vide Ventura's paper) that boys had a significantly lower pass rate than girls in English language (39% as against 57% for girls). Could the answer to the question asked in the previous paragraph lie in this simple statistic? The argument would then go something like this: Since girls are better than boys in English they possess a tool which enables them to compete on equal terms with boys in those subjects which have traditionally been considered to be the preserve of the male sex. The correlation observed between English and the Science subjects would turn out to be not just a reflection of general intelligence or of personality factors but one of dependence, where success in Biology, Chemistry and also Physics depends on the level of a candidate's knowledge of English. This interpretation would be an echo of Falzon and Sammut's tentative conclusion with the difference that whereas they were referring to Form 1 and Form 2 results, in this case we are talking about G.C.E. 'O' level results. It appears, therefore, that English remains a deciding factor in achievement in the Science subjects throughout the secondary school years. What we should go on to investigate now is whether it is the receptive or the productive language skills that enable girls to do as well as boys. In other words does the girls' superior knowledge of English help them to understand scientific explanations more readily than boys or does it simply help them to express themselves better?

We are not at present equipped with the necessary empirical evidence to answer such a question but the two investigations referred to in this paper have produced enough evidence to show that there is a causal relationship between an acceptable level of English and achievement in science subjects. The implications of this for the teacher of English as well as for the teacher of science will be examined in a future paper.

1. Falzon, J.M. and Sammut, A. (1976) Secondary Schools Annual Examinations 1975. Education Department, Malta.
2. *Ibid. op. cit.* p. 5.
3. D. Mizzi (1979) Correlation between Physics, Chemistry, Biology, Mathematics and English Language. A dissertation in the Faculty of Education presented in part fulfilment of the requirements for the Post-Graduate Certificate of Education. New University, Malta.