

EDUCATION, SCIENCE AND TRAINING

SENATE LEGISLATION COMMITTEE - QUESTIONS ON NOTICE 2003-2004 SUPPLEMENTARY BUDGET ESTIMATES HEARING

Outcome: 1

Output Group: 1.3 – Assistance for quality teaching and learning

DEST Question No. E437_04

Senator Carr asked on 6 November 2003.

Question:

The committee notes that: 'there has been a steady decline in the % of Year 12 students studying biology, chemistry and physics', which flows on to the supply of science teachers. (see *Background data and analysis*, page 19).

Does the Department agree with this analysis? And is it a problem?

To some extent this decline has been caused by growth in other areas of senior secondary curriculum (e.g. vocational education and training in schools; technology). Do we need a better balance of subjects in Years 11 – 12?

If not, why has the committee raised this issue? And what does it think the Commonwealth should do about it?

Answer:

Maths and Science Teachers

Yes. The MCEETYA Complementary Paper, *Trends in new supply of Mathematics, Science and Information Communication Technology (ICT) teachers* confirms a decline in the number of Year 12 students undertaking science subjects. It shows that the number of Year 12 students undertaking science subjects over the period 1991 to 2000 was at its lowest point in 1998 and the proportion of Year 12 students enrolled in science subjects has been generally declining since 1992.

Without having the foundations established in high school, potential teachers are unlikely to have the knowledge to take on science specialisations at university as part of their teacher training.

The increased range of subjects available over recent years in the senior secondary years of schooling has contributed significantly to increased rates of student retention. Wider curriculum choice is a positive development which has made senior secondary schooling engaging and relevant for many more students. However, as the Review notes: "A consequence of the greater choice now available to senior secondary students is that many who may previously have opted to study science or mathematics are now choosing subjects, such as business studies, psychology or computing, which they perceive to be more relevant, interesting or to have greater potential to lead to desired careers."

The 2001 Australian Government *Status and Quality of Teaching and Learning of Science in Australian Schools* report expressed concern at the declining ratio of Year 12 students to science subject enrolments for the period 1990 to 1998. In response to the report a range of activities are currently being undertaken as part of the Government's *National School Science Project* and the Australian Government Quality Teacher Programme designed to improve the quality of teaching and the teaching resources available to enhance the

appeal of the study of science and encourage an increase in enrolments in the subject in the post-compulsory years.

The Australian Government initiated the Review of Teaching and Teacher Education with a specific aim of addressing immediate teacher workforce needs in the fields of science, technology and mathematics. The Government will be considering the Review's findings in the coming months.

In line with its terms of reference, the Review Committee examined this issue because of its concern to ensure that Australia is prepared "to meet the imperatives of the knowledge society and economy", indicators of which, it states, are school participation rates and student performance in science, technology and mathematics. The Committee noted strengths in these learning areas, but concluded that "higher rates of participation in these learning areas and improved levels of student performance are required." (page 13, volume 1, *Agenda for Action, Australia's Teachers: Australia's Future - Advancing Innovation, Science, Technology and Mathematics*).

The Review Committee has not directed the actions it has recommended to address this issue to the Australian Government or other particular agencies. It recognised that school education is the responsibility of the broad education community, in particular, governments, education authorities, principals, teachers and professional associations. It has, however, commented that: "The challenge is to endow science and mathematics learning with the kind of relevance and stimulus that will appeal to all students in the primary and lower secondary years and encourage more of them to continue to advanced levels in upper secondary." Inter alia, the Committee stated that: "It is vital that teachers of these domains keep abreast of the continuing exponential growth in scientific and technological knowledge by regularly undertaking professional learning." (pages 13-14, volume 1, *Agenda for Action, Australia's Teachers: Australia's Future - Advancing Innovation, Science, Technology and Mathematics*).