

4. THEMES AND ISSUES RELATING TO POLICY

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subject produces? How can the impact of problem-based lectures, the use of computers, project work and so on, be assessed?

One of the issues that requires discussion is the importance placed upon teaching by universities generally. In many universities, promotion is based largely on research output, with teaching having a minor role. In such places, there is little incentive for academics to put more emphasis on their teaching. There are, of course, many academics who put quite a lot of work into their teaching. Should the profession, through its national bodies, show that it recognises the importance of teaching at the university level?

Another relevant issue is, where and how do academics learn to teach? Some universities have courses for their staff but these often do not go into any great depth in particular subject areas. Should more formal instruction be given and, if so, by whom and of what type?

Now that there is relatively ready access to computers, graphical calculators and calculators, it is worth examining to what extent we can release our students from some of the drudgery experienced by past generations. How has the new technology changed the content and philosophy of the curriculum? How can mathematics majors benefit from using computer technology? How can majors in other subjects benefit? Should existing programmes be delivered in the same way as in the past or can technology assist in the development of higher order skills or other more important skills?

4. THEMES AND ISSUES RELATING TO POLICY

Policy issues naturally fall into two groups: those relating to society at large and those which are the concern of a specific university or university department.

SOCIETY

The amount of control that society, through its government, takes over its universities, varies considerably from country to country. In most countries, government provides the majority of the financial support for its universities. Hence, at least indirectly, government policies will affect individual departments. How are these policies formed? What influence can and should mathematicians and mathematics educators have on them?

The previously mentioned increasing number of students at the university level has, in many nations, occurred either explicitly or implicitly as the result of government policy. Is there cause for satisfaction with the result of this policy or is there a need to change or modify it in some way?

The mathematical community is convinced of the importance of mathematics both for its own sake and for the contribution that it ultimately makes to society. It is not clear that society in general also holds this position. Perhaps it does not realise what it takes to generate the contribution mathematics can make. What does the mathematical community need to do to make society aware of the mathematical requirements of society and how these can be achieved? What does the mathematical community need to do to make mathematics more visible in a competitive environment? In what ways should society provide its citizens with the basic ideas and philosophy of mathematics and its impact on our lives, both from a philosophical and practical point of view?

UNIVERSITY

In some countries the difference between universities and other tertiary institutions is the fact that research takes place in universities. In such countries, universities have a research culture in which it is assumed that most lecturers will engage in research. To what extent should the teaching of mathematics be delivered by lecturers who are engaged in some form of research?

In some countries, university degrees are of a general nature and cover a range of topics. In other countries, there are more directed programmes for students to follow. What is more, some of the more applicable areas of mathematics may be taught outside a mathematics department by engineers, statisticians, physicists, etc. To what extent should courses be general and to what extent should they be specific to each user group? To what extent should courses be taught by mathematicians and to what extent should they be taught by experts from other appropriate fields?

What then is the role of a department of mathematics at the end of the twentieth century, given that there is a tendency for non-mathematics departments to teach their own mathematics? (This is not only for bureaucratic reasons but also because these departments are often dissatisfied with the gap between the content and approach they require and the content and approach of mathematics departments.) Should departments of mathematics be responsible for *all* of the students taking mathematics at its university or should it concentrate on its traditional clientele, the mathematics majors? Will departments which do not teach a range of students remain viable in an environment where a balanced budget, rather than education, is the main concern of administrators? What cooperation can there be with other disciplines for whom mathematics is a service course? In some cases there is an overlap in the material being taught in courses by a mathematics department and a service department. Are there good reasons for continuing this practice?

Clearly no university department can teach all branches of mathematics. Are there fundamental branches of the subject which should be in all programmes? How should the balance be struck between suitable major components?

How strongly are incoming students influenced by career prospects in mathematics? How should this affect the courses offered and the advice given to prospective students?

5. CALL FOR REACTIONS

The work of this Study will take place in two parts. The first consists of a conference which is to be held in Singapore from December 8 to 12, 1998. *English will be the language of the conference.* The conference will be a working one, where every participant will be expected to be active. Current planning is for a limited attendance of about 75 persons.

Given the style of the conference, we anticipate a variety of types of contributions that will be presented in plenary sessions, working groups, panels and short presentations. Presentations may include position papers, discussion papers, surveys of relevant areas, reports of projects, or research papers of an educational nature.

We invite contributors to make a submission for consideration by the International Programme Committee no later than 1 May 1998. Submissions should be up to three pages in length and may be e-mailed, faxed or sent as hard copy. They should be related to the problems and issues identified in this document but need not be limited to