

AUSTRALIA'S CONTRIBUTION TO UNIVERSITY EDUCATION IN ANIMAL  
PRODUCTION, IN DEVELOPING COUNTRIES

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Summary

Australia's contribution to multilateral and bilateral aid programs is comparable to that of other developed countries.

In the long term, the most effective form of aid is education, and the development of universities is critical for success. One of our aid programs to universities is through the Australian Asian Universities Cooperation Scheme (AAUCS) operating in Indonesia, Singapore and Malaysia. The program is concerned mainly with training academic staff from these countries both in their own countries and in Australia. This training aims not only to improve academic standards but also to develop a capacity for research and an ability to train postgraduate students.

The cost of our aid program in education to developing countries is seriously understated because the cost to the Australian community of large numbers of both sponsored and private students from developing countries is hidden in the ordinary education budgets of our State and Federal governments. There is a need for a clear Australian policy concerning the training of foreign students in Australian universities.

Some serious problems are encountered within the system. They involve selection of postgraduate students, inadequate financial support, the need for more course-work master degrees, and the lack of centres for the study of overseas agriculture in Australia. The demands on staff from Australian universities to service the AAUCS are almost beyond our resources and we need the active cooperation of staff from colleges of advanced education and from State and Federal authorities.

In all this work, the choice of the right people for the job concerned is critical.

I. INTRODUCTION

"The primary aim of Australia's development assistance program is to assist developing countries in their efforts to promote economic and social progress. Such progress is of fundamental importance to stable international relations" (ADAA 1977).

Since World War 2 we have spent over \$3,000 million in this way and, in 1976-77, the Australian Government spent \$378 million on development assistance (ADAA 1977).

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In the calendar year 1976, this expenditure represented 0.42% of our Gross National Product compared with the international average of 0.33%\*. However, we are committed to an internationally agreed target of 0.7%. Our international aid is spent as shown in the following table.

TABLE 1: Australian Development Assistance expenditure 1976-77  
(Anon, 1977a)

		\$ (million)
Multilateral aid (United Nations and its agencies, international financial organizations, regional organizations, etc.)		60
	\$ (million)	
Bilateral aid		
Papua-New Guinea	226	
Other countries (35)		
Projects, equipment, experts	52	
Food aid	25	
Education	14	
Other	1	<u>318</u>
Total		<u>378</u>

It is clear that our major effort is towards Papua-New Guinea, and that, so far as the other 35 countries are concerned, the resources put into education appear surprisingly small. The apparently low priority given to education in our bilateral aid programs is not necessarily our fault. Although the Australian Government decides on the overall amount of aid to be given, I understand that the recipient government decides on priorities for expenditure. Obviously, there are many competitive items on their shopping lists, apart from education, e.g. roads, railways, telecommunications, public health, etc.

Although education is important at all levels, it is with the tertiary sector that I am most concerned. When high quality educational and research centres can be developed in these countries, they will produce the leaders needed to implement their own policies in relation to social, cultural and technological change and to economic progress. In this context, it is interesting that some foreign governments, as a matter of policy, have asked Australia to assist with the development of their universities, with emphasis on faculties concerned with plant and animal production.

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\* Development Assistance Committee of the Organization for Economic Cooperation and Development, cited by Anon (1977a).

It is relatively easy to build a great dam, a seaport, an international airport or an oil refinery by simply importing "knowhow" and capital from other countries. However, it is just not possible, within a short time-span of, say, 5-10 years, to provide a developing country with effective universities and scientific research institutes. In the past, attempts to do this by substituting expatriates for local staff have been like feeding hay to sheep and cattle - the effort is often one of substitution rather than supplementation, so that the benefit, at best, has been small.

The development of universities must necessarily precede the development of research, but, once a start has been made, the latter soon follows.

### The development of universities

The growth and development of a new university in any country is slow and difficult. Early days are usually plagued with shortages of staff, facilities and equipment. In developing countries, the situation is much worse because good academic staff are scarce and for social and cultural reasons they may not be able to devote their main activities to university work. In addition, great pressure for student places leads to a highly unsatisfactory ratio between staff and student numbers.

There is an evolutionary pattern for new universities in developing countries, and four stages can be identified.

Stage 1. Usually they begin with staff who are mostly academically weak, so that **teaching** is didactic; libraries are inadequate and there are **insufficient** support staff, particularly technicians, who are usually poorly trained and unappreciated. The standards of undergraduate **courses** are, at best, only moderate.

Stage 2. With the gradual recruitment of staff who have obtained their first and/or higher **degrees** in foreign countries, academic standards slowly rise. The best graduates are identified for the award of fellowships to foreign universities in order to study for Master degrees.

Stage 3. At this stage, first degree training is satisfactory and the academic staff, who themselves have higher degrees, are anxious to develop postgraduate training. It is a slow development and is usually confined to Master degree training for some years until the staff have the confidence, finance and facilities available for the longer term training needed in Ph.D. programs.

Stage 4. The university is well-developed and ready to exchange academic staff and postdoctoral fellows with other universities and research institutes. At this stage the university has well-developed and perhaps well-known research groups.

These exchanges of staff and of post-doctoral fellows may begin in Stage 3 and are a response to the award of fellowships in a developing country and, usually, as the result of sabbatical (study) leave in **developed** countries.

I want to speak about the development of universities and, in this context, **I shall refer** to Indonesia. Indonesian universities, depending on location, age and size, fall into development stages 1, 2 and 3; our universities cover stages 3 and 4. I believe that it is no longer necessary to sponsor Indonesian students for undergraduate training, at least in the agricultural sciences and related social sciences.

## **II. THE STRATEGY OF THE AUSTRALIAN-ASIAN UNIVERSITIES CO-OPERATION SCHEME (AAUCS)**

The AAUCS was formally established in November 1969 by an agreement between the Australian Government and **the Australian Vice-Chancellors' Committee**. The appropriation of funds for the AAUCS in **1977-78** is \$860,000 but considerable hidden **contributions** are also received from Australian universities and other institutions in the form of staff released on salary and other services. The objectives of the Scheme are to help universities in neighbouring countries and in our own to attain and maintain the standards I have referred to in Stage 4 above. At present, our activities are mainly concerned with Indonesia, Singapore and Malaysia.

The AAUCS is concerned with institution building, staff and postgraduate training and the development of research capacity.'. All these activities are related and include inter alia involvement with structure and content of undergraduate **courses**, **development** of the capacity to teach basic and applied sciences, provision of critical pieces of equipment, development of libraries, language laboratories and workshops, and training of administrators and technicians.

Because our resources are relatively small, it was decided early in the program, and with the agreement of the Indonesian Government, that we should concentrate our efforts mainly on three universities in **Eastern Indonesia**: University of Hasanuddin (South Sulawesi), University of Udayana [Bali] and University of Brawijaya (East Java?). For convenience, they are usually referred to as the HUB universities. However, we do have work going on at several other universities; for example, population studies at Gajah Mada University, Jogjakarta. We also award fellowships to Indonesian academics irrespective of the university from which they come. In fact, we award "within-country" and third country fellowships for postgraduate training; for example, for Indonesians to obtain higher degrees in their own universities or at universities in other countries.

The main effort of AAUCS activity is in the training of academic staff. **There are** three major activities: postgraduate training in universities, upgrading of staff members by providing short courses for groups of specialists in Indonesia, and development of research capacity within their universities.

(i) Postgraduate training for academic staff

Most AAUCS fellowships are offered to university staff members for Master degree training. Exceptions are fellows who already have Master degrees and good referee reports. The Master degree programs enable us to give the fellows appropriate course work and significant research experience. Outstanding fellows are sometimes offered Ph.D. training at a later date - usually after 1-2 years of further work in their own country.

One of the most important decisions associated with postgraduate training is the choice of a suitable research topic. In the past, too many students from developing countries have been trained on expensive and complex equipment in narrow, specialized, laboratory-orientated projects, which have no relevance in the country from which the students came. In most instances they should not, for example, be working with amino acid analysers or atomic absorption spectrophotometers. In the agricultural and animal sciences at least, they need to be trained for applied work of the kind that was so productive in Australia during the first half of this century. For this reason, the AAUCS encourages the following types of postgraduate training:-

- (a) Master or Ph.D. in an Australian university, with experimental work in Australia. The technology and the topic for the research project must be relevant to the country from which the student comes.
- (b) Master or Ph.D. in an Australian university, with the experimental work in Indonesia. This involves problems of supervision and additional travelling costs but has much to recommend it.
- (c) Master or Ph.D. in an Indonesian university, with an Australian academic on the supervisory panel. The program may involve the candidate in a period of work in an Australian university. This type of program will become more common as the Indonesian universities gather strength.

We are also encouraging Australian university staff to allow their Australian postgraduate students to carry out their research projects at the HUP universities.

With the right academic staff and carefully-selected students all these variations on the theme can be successful.

(ii) Short Courses

These courses, lasting four weeks, are for upgrading groups of specialists in Indonesia. They are usually held at one of the HUP universities. Attendance at each course is limited to 15-X participants drawn from several Indonesian universities, together with scientific staff from government departments. We usually hold three

each year and the names of some of the courses are:

- Tropical agronomy
- Plant breeding
- Poultry production
- Pig production
- Beef cattle management and economics
- Food science
- Soil water management.

'The list could be almost endless and the scientific requirements will change as the universities develop. The topics are proposed by the Indonesians and are discussed with AAUCS representatives at an annual conference held each year in Indonesia.

The lead time for these short courses is preferably two years. There are four to five Australians in each short-course lecture team, together with the same number of counterpart staff. The counterparts are usually people who have higher degrees from an English-speaking country, so that they can, when necessary, act as interpreters for the Australian staff. Preparation for a course includes 1-2 reconnaissance visits, planning the course details, pre-printing sets of notes, developing facilities, arranging for the purchase of animals and feedstuffs, development of pasture plots, purchase and shipping of equipment, liaison with counterpart staff, etc. The Australian staff would normally arrive in Indonesia 1-2 weeks before the scheduled start of the course, in order to make final preparations. Excluding Australian academic staff salaries, the Australian costs for a course are about \$30,000; a substantial contribution is also made to a host university by the Indonesian Government.

During a short course, the best participants are identified and they are usually the people chosen later for fellowship awards to Australia and also to lead research projects in Indonesia.

(iii) Development of research capacity within universities

(a) Follow-up research

In moving from Stage 2 to Stage 3 of development, it is necessary for a university to develop a research capacity. After a short course, usually 5-6 participants are offered funds to support research projects based in their own faculties. The participants are invited to suggest their own research projects based on the problems in their area and we fund the best of these projects. Most projects are planned to be completed in 2-3 years and the average annual budget for each, which excludes salaries, is of the order of \$4,000. At present, the work is supervised from Australia, by appropriate staff who visit Indonesia annually.

Some projects are a dismal failure and others are a great success. So far we have concentrated on applied research because, in the animal industries at least, Indonesia is at the stage of identifying its major problems. Much data collection in surveys is needed; for example, some questions that need to be answered in the cattle industry are as follows:-

What diseases and parasites are present, and where are they found in Indonesia?

What are the seasonal growth patterns of cattle in different parts of Indonesia?

What are the growth rates and mature sizes of different types of cattle in Indonesia?

How efficient is reproduction in these cattle? (Much information is needed on such factors as age at puberty, calving intervals, conception rates, calf survival rates).

How is the performance of cattle related to current management procedures?

(b) Appointment of research coordinators

As the results of surveys accumulate and bottlenecks in production are recognized, the next step is to carry out experiments designed to provide solutions to these problems. Indonesia is entering this phase at the HUE universities so that we are changing our approach. We plan to support new work which is not necessarily 'follow-up' research after short courses, but, instead, consists of experiments proposed by the local staff. To evaluate such projects, we have appointed Australian research coordinators at each HUE university - one in Plant Sciences and one in Animal Sciences. A research coordinator needs to visit his HUE university each year to retain familiarity with all work going on there in his general area of responsibility, irrespective of who is doing the work and of the source of funds. Care must be taken not to 'overload' staff members with too many projects or to fund work which is already being financed by another agency! All research coordinators meet once or twice a year in Australia in order to coordinate their activities and to prepare budgets to support this work.

(c) Visiting academic assignments

The AAUCS encourage Australian academic staff to spend periods of not less than three months on visiting advisory assignments at the HUE universities. The Indonesians would prefer such visits to be longer. The task of such visitors is to work with staff and postgraduate students - to help in curriculum development, to give and to lead seminars, and to help and advise on research activities. In most cases the working language is English but where visiting Australians are fluent in Bahasa Indonesia, the use of this language is preferred. However, there is a strong feeling amongst some senior Indonesian administrators that, at the postgraduate level, staff must be able to work in English. My own feeling is that Australians working at Indonesian universities should be encouraged to learn Bahasa Indonesia.

Some Australians and some Indonesians feel that visiting academics' assignments provide better value for money than short courses. The issue is not clear cut because the former helps only

a small group at one university and the latter helps people from many places. Roth are important at present.

### III. SOME OF THE PROBLEMS

Our aid program does not run as smoothly as so far suggested. There are many problems and I shall deal with a few of them.

#### (i) Foreign students in Australia

Table 1-does not include the substantial cost to the Australian community of providing facilities in our own schools, colleges and universities for government-sponsored and privately-financed students from overseas.

In 1975/76 there were 4197 sponsored and 7374 privately-financed students and trainees in Australia from other countries\*. The amount of money needed by our educational institutions to service these people was several times that spent on education in our bilateral aid programs. In 1977, there were 6752 of these students in our universities, representing 4.3% of Australia's university student population\*\*. Assuming that these students were full-time, the cost to universities was \$28.7 million in 'December quarter 1976 dollar values' (Anon, 1977b). In 1978 this represents well over \$30 million at an average cost per student of over \$4440. These costs should be identified by our State and Federal Governments. In addition, the cost of training a postgraduate student from a developing country is more than for an Australian student because the overseas student needs more supervision. We have reached the embarrassing situation in my department where target student numbers have been exceeded, but, at the same time, we are being asked through the Department of Foreign Affairs to accept more sponsored students. What priorities should be given to the acceptance of foreign students within our present quotas? I believe that there should be special additional quotas for sponsored students and that most of the taxpayers' money spent in Australia on privately financed overseas students would be spent more effectively on education in our bilateral aid program.

#### (ii) English as a foreign language

There is no point in offering a postgraduate fellowship to a staff member to work in Australia unless he can speak English. In addition, probably 90 per cent of the information in Indonesian libraries is in English. Therefore, the establishment of English language centres at the HUB universities has been an important part of the AAUCS program. Indonesian staff members have been trained to teach at these centres and Australian Volunteers Abroad, based at a HUB laboratory for 1-2 years, are of tremendous help in this work.

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\* Department of Education, Canberra, 1977 - Personal communication.

\*\* N. M. Stubbs, Statistical Officer, University of Melbourne - Personal communication.



(iii) Development of libraries

Much effort has gone into the development of the HUB university libraries. Librarians have been trained, libraries have been re-structured and large quantities of books and subscriptions to journals have been provided. However, progress is slow and these libraries are still below those expected in a 'Stage 3' university.

(iv) Technical services

There is a great need in Indonesian universities for skilled technicians to improvise and repair equipment for both undergraduate teaching and for research. We have established Technical Services Support Units in the HUB universities mainly to support the agricultural and animal sciences. This involves not only the equipping of modest workshops but also the training of technicians.

(v) Postgraduate training in Australia

The methods of selecting AAUCS fellows leaves much to be desired. It is tempting for foreign governments to recommend the elderly, loyal senior academics, rather than the bright, younger ones, for overseas trips. In addition, ability to pass a test for English as a foreign language (TEFL) is regarded, in some places, as the most important criterion on which to base a favourable recommendation for an award. This is not good enough. Hughes (1976) recommended that selection should be based on academic achievement, Australian universities are accepting some mediocre foreign students for higher degree training. This leads to unreasonable demands being made on staff who, for psychological reasons, put far more effort than they should into making sure these students succeed. It is no credit to us that a man who gains a Ph.D. has had his thesis almost 'ghost-written' by his supervisor. To make matters worse, the research programs required by foreign students rarely fit well into our departmental research programs. This means that our research efforts are diverted into activities which may not be of particular scientific interest. The final indignity is to receive a supporting grant of \$500 per year for each student. To work with cattle in an animal house or on a field station requires labour, animals, equipment and materials. A year of work costs some thousands of dollars. There is now a growing resistance, by committees administering farmer-contributed research funds, towards the use of their resources in projects to train postgraduates for other countries.

In Australia, the foreign students face serious personal problems. Many of our AAUCS fellows are married men with children. Although families can come to Australia, allowances are inadequate. Some of our students have lived in poverty, relying on the charity of staff members and friends. For those who leave their families at home, the consequences of a long separation are likely to be serious.

Unfortunately, first degree courses in developing countries do not always equip fellows to begin training for postgraduate research degrees in Australia. There is a need for more course work Master degree programs for students from developing countries. Such programs

normally include a small research component and, apart from their intrinsic value as upgrading courses, they also serve to identify potential Ph.D. students for research training. The Australian National University has two such Master degree programs - one in Population Studies and the other in Development Economics. At James Cook University, the Department of Tropical Veterinary Science offers a one-year course-work Master degree program. Although it is not specifically designed for students from developing countries, it can be modified to suit them by choice of topics for reviews, seminars and research. Of 105 postgraduate students accepted in this department since 1969, for-both Master and Ph.D. degrees, 78 have come from 28 developing countries (Anon. 1977c).

In the agricultural and animal sciences, course-work Master degrees could be developed to serve not only graduates from the wet tropics, but also from other areas of the world - the Middle East, Africa, South America, Asia. As pointed out by Hughes (1976), "Australia . . . uniquely shares a number of ecological similarities with developing countries". Clearly, there is a need for more university centres concerned with "Overseas Agriculture". These activities would be multi-disciplinary and the courses offered would differ between universities. Some, I hope, would also offer special courses to Australian graduates for whom there is an increasing demand in development programs funded both by multilateral and bilateral agencies.

#### (vi) Australian staff

When we select a short-course team of Australian lecturers, it is not easy to get the right combination of people at the right time. The Schools of Agriculture and Veterinary Science in Australia are overstretched in meeting current demands from the AAUCS. Vice-chancellors are sometimes reluctant to release people for this work. There is an intellectual opportunity cost to the university and to the individual in interrupting normal teaching and research programs, even if replacement costs are met and temporary staff employed. However, there is also a 'refreshment' value from a change in, and the challenge of a new, environment.

We need to grow beyond the stage when the release of staff creates a departmental crisis. If Australian universities are to become more effective in our aid programs they need to have additional staff positions within the departments concerned so that aid can be given on a continuous basis and not on the present stop-go pattern. There are individuals whose academic talents could be used best in foreign aid work both at home and abroad. Until we have staff structures to accommodate these people, our efforts will be less effective than they should be. Appointees to these positions should be experienced people with ability and enthusiasm and not tired academics looking for soft jobs.

Because of the limited availability of staff within our Schools of Agriculture and Veterinary Sciences for aid programs, we need to be able to draw on staff from colleges of advanced education and State and

Federal authorities and on people in private practice. On the whole, colleges and government authorities have been extremely cooperative in releasing staff for AAUCS work. Nevertheless, difficulties do arise, and procedures need to be streamlined.

Another problem is that we do not always know where to find the right people. We need to have access to a register which lists the professional skills and experience of people interested in aid programs.

AAUCS activities form only a small part of Australia's aid program to develop educational and research resources in developing countries. In this paper there is no room to discuss the broader issues of making more effective use of our national resources to do this. However, this has been done recently by Hughes (1976) and Hardacher (1977).

One thing is certain; success will depend on choosing the right people for this work. The rewards are largely intangible for those involved; one hopes that their efforts will contribute towards the development of international goodwill and social and economic progress in the countries concerned.

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