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## MARINE STUDIES PROGRAMME

### TECHNICAL REPORT

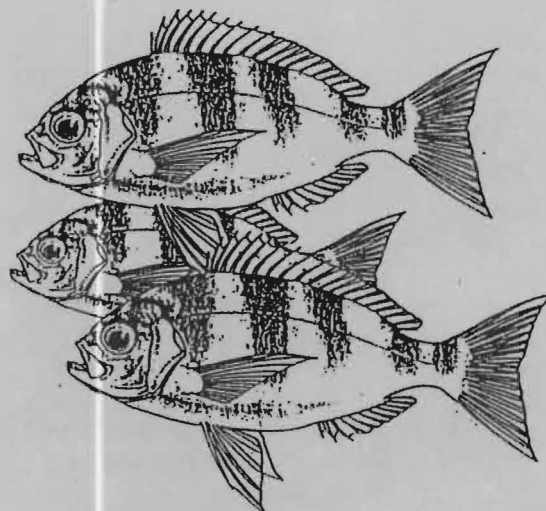
#### EDUCATION IN THE PACIFIC ISLANDS, INCLUDING A REVIEW OF OPPORTUNITIES AND CONSTRAINTS FOR EDUCATION AND TRAINING IN MARINE STUDIES.



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**EDUCATION IN THE PACIFIC ISLANDS,  
INCLUDING A REVIEW OF OPPORTUNITIES AND CONSTRAINTS FOR  
EDUCATION AND TRAINING IN MARINE STUDIES<sup>1</sup>**

by

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## INTRODUCTION

The peoples of the vast region encompassing the Pacific Islands are wedded to the sea by tradition, by history, and by geography, and have relied on its seemingly endless resources for their daily nutrition since their ancestors spread from west to east on their epic migratory journeys. With their new economic zones established as a result of the Law of the Sea, the territory of these small nations has been enormously increased during the past decade. While this new wealth is largely untapped, the burden that it places on its custodians is overwhelming. This, combined with growing population pressures and consequent pollution of sensitive coastal environments, increases in tourism, greater pressures on the traditional fishery of reefs and lagoons, lucrative opportunities to give distant water fleets access to the deep sea fishery of their economic zones, dwindling resources, and the development of new technology such as aquaculture, production of energy from the sea and the creation of artificial habitats, has led to an unprecedented expansion of activities in all aspects of the marine environment.

If the peoples of the South Pacific are to properly manage, utilize and comprehend the oceans that dominate every facet of their lives, and to preserve them intact for future generations of Pacific Islanders, they must develop the programmes in education, research and training that are needed.

There is a sense of urgency; the daily news tells of climate change, of sea-level rise, of pollution and of changing social patterns that are at times baffling, and at times conflicting. We hear of dwindling fisheries, of the extinction of marine mammals, of the destruction of habitats by carelessness or greed. Suddenly, Man has come to realize the finiteness, even of the vast oceans.

There is, therefore, a need for long-term planning at all levels of the educational sector, and unless this need is recognized future generations will have no basis on which to properly manage their ocean resources and environment, since the population will be unaware of the need and the enormous opportunities.

The resources sector is entering a period of major growth, but concomitant with that growth will be the emergence of important problems in the sociological and economic areas that are in direct conflict with the traditions of many of the cultures of the Pacific Island nations. While these questions will focus in part on the reef and lagoonal environments that are critical to the region, equally dramatic changes are taking place in the vastness of the deep ocean that predominates the South Pacific. This ocean remains a huge frontier, one that challenges small island governments and the international community of every front, since it remains scarcely explored, yet is the system that drives every facet of the existence and well-being of the peoples who inhabit its fringes.

There is an overwhelming need to develop national and regional programmes that focus on the development of appropriate school curriculum materials on marine topics (at all levels of the system) and to devise appropriate training mechanisms for teachers. A number of initiatives are important in this regard: the education programmes being conducted by the South Pacific Regional Environmental Programme (SPREP); educational materials being developed by the FFA (such as posters); In-Service courses being conducted through the Ocean Resources Management Programme at USP; the UNESCO Programme developing a marine textbook for Western Pacific Schools; the individual efforts of researchers in universities to inform the public on issues of importance in the marine sector; the plans of various national Departments of Education to include marine-related subjects in the school curriculum. These initiatives are to be commended, but even taken together, they cannot address all of the needs.

In order to properly assess the need, a review of the current status of educational systems, their accessibility, their programmes and their constraints is necessary. It was the purpose of this study to conduct such a review.

## METHODS

A survey of education systems in a total of 15 Pacific Island countries in Micronesia, Melanesia and Polynesia was conducted during January - May, 1991. The review was made when I independently participated in a Fisheries Human Resources Survey sponsored by the International Centre for Ocean Development (ICOD), under the auspices of the South Pacific Commission (Sutherland *et al.*, 1991). The time available for consultations in each country was limited to a few days, during which time discussions were held with senior education government officials, and visits were made to most tertiary institutions.

In this review, a commentary is provided on the administration of education in each country, together with an overview of primary, secondary and tertiary education systems. Where possible, current statistics have been included, and the support programmes for students progressing to tertiary institutions are discussed. For a number of the countries, constraints within the educational system are summarized.

Reports are provided on fifteen countries, arranged in three sections: Micronesia, Melanesia and Polynesia, and are followed by a discussion and analysis of the results of the survey.

## SURVEY RESULTS

### A. MICRONESIA

#### 1) KIRIBATI

Elementary, Secondary and Tertiary Education in Kiribati comes under the administration of the Ministry of Education, with the exception of the Marine Training School, which comes under the Ministry of Trade, Industry and Labour.

#### Elementary Education: (Class 1 - 6)

All elementary schools are government run, and attendance is compulsory. Children attend Classes 1 - 7 (ages 6 - 12). English is introduced in Class 4. More than 13,000 students are enrolled in Elementary schools, which are located throughout the country. Teachers are encouraged to take up posts in their home districts; the current teacher/student ratio in Elementary schools is 1:27.

The Government has made significant progress in improving the qualifications of Elementary School Teachers, Elementary Teacher training is provided in-country through the Tarawa Teachers' College, which currently has an enrolment of 30. The Government also provides support through a Curriculum Development Unit, and a Schools Broadcasting Unit.

### Secondary Education: (Forms 1 - 7)

Completion of Secondary Education to Form 7 is possible only through the Government-run George V Secondary School, based in South Tarawa. Other secondary schools are operated by the Churches, where the teachers are mostly nuns and volunteers; these schools normally operate up to Form 5, with a comparable curriculum to that of King George V. Students in all Secondary Schools take qualifying examinations in Forms 3 and 5; Church School students may transfer to King George V school for Forms 6 and 7, and there is an annual graduation from Form 7 of about 20 students. There is no government-sponsored out of country secondary education. Those not qualifying for King George V may take Form 6 through the USP Extension Service for University Entrance. Other students enter clerical positions, or other Tertiary Institutions.

Most secondary teachers in the government school are University graduates. At present, the secondary curriculum has a strong national emphasis. The Ministry of Education

has recently made a proposal to expand the Curriculum Development Unit to include secondary level curriculum development and support, which will involve the USP Institute of Education.

### Tertiary Education:

#### **Tarawa Technical Institute (TTI)**

The principal tertiary institute in Kiribati is the Tarawa Technical Institute (TTI) which runs apprenticeship training in a variety of trades including motor mechanics and building construction. TTI also runs a course in accounting (ATT), mostly for government employees, and several short courses in computer studies and English language (speech and written). It also operates a Rural Development Center which runs projects to assist outer islands (construction of desks, water tanks, low cost houses and class rooms).

#### **Marine Training Centre (MTC)**

Training for the industrial fisheries sector is conducted at the Marine Training Centre (MTC). MTC has run 6 month induction courses for new entrants to Te Mautari as well as some in-service training courses. There is currently little demand for such courses from Te Mautari but the Center is running G5 Mate and G5 Engineer courses for a small number of people. The main role of MTC is to train general purpose ratings for overseas (mainly German) merchant ships. It turns out an average of eighty a year and 1,200 I-Kiribati seamen are currently employed on German ships earning Kiribati approximately seven million dollars in remittances annually.

In 1988, following discussions between the Governments of Kiribati and Japan, MTC started a six month course for deck hands on Japanese pole and line fishing vessels. This course is run by three Japanese staff and accommodates 36 students usually selected from forms 2 to 6 ( 17 to 23 years). This will, in the longer term positively affect the manpower development of Te Mautari.

## Scholarships

Each year about 15 scholarships are awarded for tertiary education overseas, where successful students are supported in programmes in Technical Institutes and Universities. The preferred University is USP. Including the Form 7 qualifying students, a total of up to 100 students may apply for the 15 scholarships in any one year; the upper age limit is 36 years.

Scholarships are awarded on the recommendation of the Scholarship Committee. The Committee is Chaired by the Senior Education Officer. There is an established set of selection criteria, and the number and type of scholarships depends on the projected training requirements of the Manpower Planning Office. Projections are generally made on the basis of anticipated vacancies or staff changes during the time-frame of the scholarship. Preference is given to 7th form leavers, and not all candidates can be accommodated.

While there is no bonding system as such, returning graduates are expected to serve their country. Changes in the prescribed programme of study may only be made with the permission of the Government. There are some problems associated with the scholarship programme, including:

- students were not aware of the government priority areas for awarding scholarships and some of the better students applied for scholarships in areas of low or nil priority thereby losing the chance of a scholarship. Because of this, there is the need for a system of counseling for secondary school students which will match students abilities to the jobs available.

- a currently high failure rate at University.

The high failure rate may be attributable to difficulties with language, and mathematics skills. There are various efforts being made (e.g. Peace Corps, TTI, etc.) to assist in the teaching of English.

## General constraints of the Kiribati educational system:

- There is an attrition of qualified teachers from the secondary school system, this is largely because of better opportunities for advancement, and better salaries, in other Government sectors. Currently the Government has placed a moratorium on applications from teachers for Government positions. It has completed a review of Elementary School salaries, and is currently initiating a review of Secondary School salaries.

- The Government has difficulties exercising quality control on non-government Secondary schools.

## 2) MARSHALL ISLANDS

Education in the Marshall Islands is under the jurisdiction of the Ministry of Education, which is responsible for primary and secondary public schools, for the College of the Marshall Islands (incorporating the Marjuro campus of the College of Micronesia) and the Private Industry Council. In 1991, it is estimated that there will be approximately 14,200 children attending school in the Marshall Islands (12,100 in Elementary School; 2,100 in Secondary School).

The Marshall Islands are facing some major difficulties with the educational system; these include:

- inadequate schools and infrastructure at all levels
- large numbers of drop outs
- a less than satisfactory participation level
- a lack of community involvement in schools
- inadequate curriculum control over private schools
- an urgent need for the development of vocational training for drop out students seeking to enter the job market.
- inadequate instruction in the English language.
- an annual population growth-rate of 4%, an average age of less than 15 years, and a concentration of more than 60% of the Marshall's population on the Marjuro atoll.

From discussions with Ministry of Education officials it is evident that major efforts are being made by the Government to deal with many of these difficulties, but in some areas, the problems are so overwhelming that there seems to be no simple solution.

### Elementary Education: (Grades 1 - 8)

Attendance at Elementary School is compulsory for all children between grades 1 and 8, although participation is currently at about the 80% level. Many of the students are in church-run (private) schools. About 75% of students will complete grade 8. While the Government is concerned both by the participation rate and drop out rate, it is also grateful that more children do not attend, since there are inadequate facilities to accommodate even those that do attend public schools.

### Secondary Education: (Grades 9 - 12)

Only two thirds of the children completing grade 8 continue on to public and private secondary schools. The system just cannot accommodate the bottom 1/3 of the class who may wish to continue their education. Statistics indicate that about 54% of those starting grade 9 do not reach graduation from grade 12.



## Tertiary Education

### **The Private Industry Council:**

The Private Industry Council (PIC) is a joint venture between the private sector and the government. It was especially set up to provide programmes for school drop-outs under the Job Training Partnership Act. There are several programmes operated by PIC through contract with the College of the Marshall Islands.

1- Youth Option: Currently about 150 students are enrolled, taking basic skills training leading to a Diploma.

2- Probationary Skills Programme: About 60 students are enrolled in programmes; such as, restaurant trainee, carpentry, mechanical, and electrical. Shortage of teaching staff limits the skills taught to the beginning level.

3- On the Job Training: A 50/50 shared cost industry/government programme for up to 1,000 hours of work, with a suitable guarantee at termination for more training, or employment opportunities.

The following programmes were indicated as being under development: an Apprenticeship Training Programme (involves sending 10-students to Guam Community College, with 10 different areas of study); a local apprenticeship training programme similar to that being developed with Guam.

### **College of the Marshall Islands:**

The College of the Marshall Islands (CMI) is a branch of the College of Micronesia. Training programmes specific to the College are nursing and teacher training. Currently the College has an average enrolment of 250-280 students/semester. Entry requires Grade 12 graduation. There is a grant programme that covers the total cost for students living at home (PEL), but for those living in residence, some supplementation is needed. Other programmes include: business; accounting; science; in-service programme for teachers.

New initiatives being taken by the CMI include the introduction of a two-year programme in Marine Science (equivalent to Preliminary and Foundation levels at USP).

In 1991 CMI joined the University of the South Pacific. New possibilities resulting from this will include: collaboration in the development of the new course proposed under the USP Marine Science Programme "Introduction to Marine Science"; participation in the proposed new certificate and diploma programmes in Ocean Resources Management.

### The Marshall Islands Scholarship, Grants and Loan Board

Members of the Board are cabinet-selected; it is chaired by the Chief Planning Officer, and membership includes politicians, members of the business community and a representative from the Ministry of Education.

Qualification criteria for scholarships are very rigid, and require a GPA of 3.0, and a TOEFL score of 500 or higher. Intending students make their own enquiries for entry to institutions of higher education in the United States (ranging from colleges to full-scale universities) and are not considered for scholarships until they have been advised that they qualify for admission to the institution of their choice. The scholarship qualification criteria were so rigid because most grade 12 leavers are too immature socially and insufficiently qualified in English Language for them to make a smooth transition to a US institution. Education Officials consider it preferable that students spend two years at the College of the Marshall Islands, enabling them to mature socially and academically, before going elsewhere.

### **3) FEDERATED STATES OF MICRONESIA (FSM)**

Education in the FSM falls under the jurisdiction of the Federal Division of Education, one of two Divisions in the Department of Social Services. State governments have control on the delivery of education, and there is a Department of Education in each State headed by a Director, who is a member of the State Cabinet. General policies are overseen by the FSM Board of Education, which comprises 5 members, one from each State, and the FSM Chief of Education.

The Division of Education and the State Departments of Education oversee Elementary (Grades K-8), Secondary (Grades 9-12) and Post-Secondary (College of Micronesia) programmes. Currently, the Micronesian Maritime and Fisheries Academy is not under the Division of Education.

Public expenditures on schools are in the range of 35% of the GNP, one of the highest ratios in the world.

#### **Elementary Education: (Grades 1 - 8)**

School attendance in FSM is compulsory for grades 1 - 8 (until age 15), and participation is currently at the level of 97-98%. There are more than 32,000 children at school (K-12), with 28,600 of them at Public School, the remainder at Private School; of these, 24,600 are in grades K-8, the remainder in Grades 9-12. The teacher/student ratio varies from 1:10 (Yap) to 1:26 (Pohnpei).

Students take an examination at the end of Grade 8, and if successful receive a Diploma.

#### **Secondary Education: (Grades 9 - 12)**

There are insufficient school places to accommodate all students who qualify for admission to Secondary School; this varies by State. For example, in Kosrae all eligible students can be accommodated, in Chuuk and Pohnpei, only about 40% continue on, the remainder drop out.

In order to meet the increased demand for vocational skills for school-leavers, two of the Secondary Schools have developed special programmes. One is the Pohnpei

Agriculture and Trade School, which offers a variety of vocational programmes, including new two-year post-secondary programmes in architecture, furniture making, machine technology, and electrical and plumbing maintenance. The other is the Chuuk Learning Centre, which offers remedial instruction to assist students enter regular school programmes. There is also a programme called the Alternative Secondary Education Development programme, which offers a 3 month remedial programme and then a qualifying examination for admission to the freshman year.

#### Post-Secondary Education:

##### **Community College of Micronesia:**

The Community College of Micronesia was founded in 1970, primarily as a two-year pre-service elementary teacher education institution. In 1977, the Community College of Micronesia (CCM) became a constituent of the College of Micronesia (COM) system, and included the School of Nursing in Majuro (transferred from Saipan in 1987), the College of Micronesia in Pohnpei, and the Micronesian Occupational College in Palau.

In response to the increasing demands for developing and conserving local marine resources, a two-year degree programme in Marine Science was added to the curriculum in late 1986. In 1987 a Fulbright scholar was assigned to implement the A.S. degree programme. To date 6-8 students have graduated from the programme. Only one of these graduates has continued on in a related field and works in the Pohnpei State Government Fisheries. The intention was that students completing the two-year Marine Science Programme would continue on to the University of Guam, but since the University of Guam does not have an undergraduate marine programme, this has not happened. Staff at the CCM stated that there has been no collaboration with the College of the Marshall Islands, where a marine programme is currently being developed. It would seem a valuable exercise for the College of the Marshall Islands to review the curriculum of the Pohnpei CCM, in developing their programme.

Since 1978 CCM has been a member of the Western Association of Schools and Colleges, thus allowing course credits to be transferred to other institutions. Since the beginning of the 1980s the college has progressed to include eight programmes.

High school graduates, secondary school seniors, or applicants who pass the General Education Development Test (GED) are eligible to apply for admission to the CCM. Information provided by CCM indicated that there is a very uneven success rate state by state for entry into the College, with virtually none coming from Chuuk because of the standards of the secondary schools, but a high success rate from Kosrae. For Micronesian students in general, the best success rate was from Palau.

##### **Micronesian Maritime and Fisheries Academy**

This Academy is situated in the state of Yap at a site which was formally a US Coast Guard station. The site, buildings and equipment were donated to Pacific Missionary Aviation

(PMA) in 1987. Using donations mainly from the church and following a feasibility study prepared by Recraa International Ltd. of the Philippines, PMA has developed the complex into a Maritime and Fisheries Academy.

The original concept of the academy was exceedingly ambitious. Plans included education in almost all areas of fishing, research and aquaculture to the diploma and degree level as well as merchant service officer training and vocational/ apprentice training in a variety of subjects. It is doubtful that the manpower resource available for training/education, or the employment infrastructure existed to support this ambitious but now discarded concept.

The present approach is to service the existing needs of the fishing sector through the operation of skipper, deck hand and engineer courses. The second class, consisting of 9 skippers, 1 able body seaman and 8 engineers, graduated in January 1991 after a five month training course. The academy staff presently number seven including 3 Filipino navigation and seamanship tutors.

The Academy is well equipped to run residential courses and if it follows its present pragmatic principles will be of great assistance to FSM in helping with the development of the proposed longline and purse seine joint ventures through the supply of trained ratings, skippers and engineers. In this area, the school deserves support from all sectors within FSM, and efforts should be made to communicate and coordinate this new training initiative with other Pacific countries so that duplication of facilities and programmes can be avoided.

If the academy fully develops its capabilities to service this area, and obtains a steady throughput, it will then be in the position to further develop courses to meet specific needs should these be identified.

#### Constraints within FSM the educational system:

Some of the constraints mentioned for the educational system (Government of FSM, 1990) are:

- full access is not possible for the 14-18 year old group.
- many teachers and administrators are not well trained in their fields.
- there is still a strong dependency on off-island especially US mainland institutions that are expensive and insufficient for FSM needs.
- the FSM Community College System is under utilized and not structured to meet current planned business and industry needs.
- the system is widely scattered (65 inhabited islands)
- there is a need to cope with 14 different local language, while the national policy is to stress English as a second language.

The Ohio University Team that investigated the FSM educational system in 1989 included the following observations among their findings:

there is an insufficient pool of well-trained manpower needed for the economic growth hoped to be realized by the FSM.

- the post-secondary education system does not have capacity or expansion plans to meet its short and long-term needs.
- little is known about the status, success or problems of CCM graduates.
- large numbers of FSM students leaving for post-secondary training could be effectively trained at home at great savings.
- youth and adult basic and vocational skills are below the acceptable level of current and projected private sector employers.
- job training is limited by lack of labour or market projection data.
- lack of articulation between high schools, post secondary institutions and other training providers promotes duplication and voids in delivery.
- there will be a need for a senior college system with sufficient enrollments by the year 2,000
- strategic educational planning related to the nation's economic development is lacking.

#### 4) PALAU

The Palau National Government is charged with the responsibility to provide free and compulsory education (Art. VI of the Constitution of the Republic of Palau). Most of the functions of the Office of Education at the Trust Territory Headquarters in Saipan were transferred to the Republic of Palau on January 1, 1981. Federal programmes remained at the Trust Territory Headquarters until August 1987, when the Trust Territory Office of Education was finally closed down and all the functions of the federal programmes were transferred to the Republic of Palau Government (42nd Annual Report, 1989: Trust Territory of the Pacific Islands).

The administration of education in Palau comes under the Minister of Social Services, and falls under the Bureau of Education Administration, which has three divisions: Division of Elementary Education, Division of Secondary Education, and Division of Curriculum Development. Each Division is headed by a Division Chief, and the operation of the Bureau is carried out by the Director, who is responsible to the Minister of Social Services.

The Bureau provides administrative services and logistic support to all divisions in the areas of budget preparation, personnel, supplies, maintenance of facilities and equipment, teacher and staff development, higher education, student services and teacher training.

##### Elementary Education: (Grades 1 - 8)

School attendance is compulsory for children aged 6-14 (Grades 1-8). In 1988-1989 2,258 children were in attendance at the 24 public elementary schools under the supervision of the Chief of Elementary Division. It is estimated that there is a 98% participation rate. The number of elementary students has been declining for the past 8 years, this attributable to out-migration of the population, and family planning. There is a very low student-teacher ratio (1:12). Attendance at private schools in 1989 exceeded that in public schools (2,873 in grades 1-8).

### Secondary Education: (Grades 9 - 12)

In 1989, just over one thousand students were attending high school (Grades 9-12), either the single public school (630), or one of four private, church-run secondary schools (415). Other students may elect to attend schools outside Palau. Each year Palau High School administers entrance tests in English, Math, Science and Social Studies to all students who completed elementary education. In the 1988-1989 school year, 60% passed and were

placed in the regular Palau High School Programme. A further 60 students (18%) were placed in the high school remedial programme; the remaining 22% of the students failed the test.

While high school attendance is currently not mandatory, with the Five-Year Education Plan which took effect in 1988, it should eventually become mandatory.

Private Schools are chartered every three years, and in order to maintain their charter they must offer the four basic courses of the public system (English, Mathematics, Science and Social Studies).

### Tertiary Education:

For the past eleven years it has been estimated that about 75% of the students graduating from Palau secondary schools go on to post-secondary education. Approximately 100 students graduate annually from Secondary School.

### **The Palau National Scholarship Program**

Grade 12 graduates may apply for scholarships to post-secondary institutions overseas. Students must have a GPA of 3.0 or higher to qualify for a scholarship, and in any year between 6 to 12 students qualify. Their applications for scholarships are evaluated by the Palau National Scholarship Board, which is currently chaired by the President of the Micronesian Occupational College in Koror, Francis Matustaro. Members of the Board are appointed by the President of Palau, and approved by the National Congress and Senate. The current membership comprises 7 members.

The current annual scholarship fund is \$200,000, and between 75 and 100 students are supported in any year. The value of the scholarship is proportional to the number of students being supported at any one time. Usually all students that qualify can be awarded a scholarship, but the scholarship does not cover all costs. When applying for scholarships, students must provide proof of acceptance at a tertiary institution. Areas of study are determined by the National Scholarship Board on the basis of identified national priorities, which at present are: Vocational Training; Business; Management.

In 1990, 5 students successfully graduated from University, 4 with a BA degree, and one with a Masters Degree. The staff stated that there is a high loss of successful Palauan

university graduates to the mainland US, since they are attracted to stay there for higher salaries and better employment opportunities.

There is no bonding system for scholarship awardees, and there is no guarantee of employment when they return to Palau after completing their post-secondary education.

### **Micronesian Occupational College**

The Micronesian Occupational College (MOC) was established in 1979. The MOC offers vocational training to school leavers, and various remedial programmes in basic subjects, for students wishing to obtain a Grade 12 certificate. MOC also plays a significant role in teacher in-service training and up-grading.

In January 1991, the MOC established a Science Centre, and appointed a Coordinator and a Science Curriculum Specialist. The Science Centre will address some important deficiencies in the Palauan educational system, and will initiate a science programme that will be integrated in the MOC curriculum. The goals and mission of the Science Centre are:

- to develop a Science Programme in recognition of the neglect of science in elementary, and especially secondary schools, and the overall weakness of the science curriculum in grades 1-12 (which in turn lead to post-secondary difficulties).
- to assist Palau in the development of Palauan scientists, since these are recognized as important to the future economy and development of the country.

In order to have the greatest impact on schools, the Science Centre will be a joint venture between MOC and the Bureau of Education Curriculum Division. The Coordinator and Science Curriculum Specialist also recognize the importance of Marine Science to Palau, and hope to incorporate some Marine Science units in the curriculum. In this regard, they expressed a desire to collaborate with the Marine Resources Division with a view to obtaining advice on future training needs of the Government.

## **5) COMMONWEALTH OF THE NORTHERN MARIANAS (CNMI)**

Education at the Elementary and Secondary school levels falls under the jurisdiction of the Public Schools System, and is administered by the Commissioner of Education. Education is compulsory for all students from grades 1-9 (age 16), and includes Elementary (Grades 1-6), Junior High (Grades 7-8). High School includes (Grades 9-12). Per pupil expenditures in CNMI averaged US\$2,331 in 1989, second highest in Micronesia next to Guam. The average teacher:student ratio was 1:20. Career opportunities identified by the Public Schools System as priorities for CNMI were: Technology; Computing; Mass Communication; and Health.

### Elementary Education: (Elementary and Junior High)

Attendance at Elementary and Junior High Schools (Grades 1-8) in 1989 totalled 5,187 (1,142 of these in Private Schools). A science curriculum was introduced into the Elementary Schools (Grades 1-6) in 1987, and is expected to be reviewed soon. Through the services of Coastal Resources Management (Marine Education Specialist) an innovative and imaginative series of books, curriculum materials and teacher aides have been developed and will be introduced into the schools in 1991. Teacher workshops and in-service programmes are also being developed to upgrade teachers. The science programme has been developed in recognition of the need to improve the science literacy of the population of the CNMI, and is long-term and wide in scope.

### Secondary Education: (High School; Grades 9 - 12)

Attendance in High Schools numbered 1,471 in 1989 (1,302 in Public School, and 169 in Private School). The attrition rate by grade 12 graduation is in the range of 30% for students who entered grade 9. While precise information was unavailable, there are indications that less than 1% of CNMI Public School graduates go on to University, whereas approximately 30% of the Private School students gain entry to University.

A concerted effort is underway to improve the science curriculum in the High Schools, in recognition of the need to greatly improve the teaching of science and to stimulate students towards the potential of a science career. The Public Schools have science teaching laboratories and can do "hands on" practical exercises. Fish and Wildlife staff give regular presentations at School Career Days, and similar presentations by faculty of the Northern Marianas College form part in these activities. A programme of Science Fairs and Science competitions is on-going through CNMI as a means of attempting to improve the image of science.

### Tertiary Education:

#### **Northern Marianas College:**

The Northern Marianas College (NMC), the only tertiary institute in the Commonwealth, falls under the Office of the Governor. College programmes are overseen by the Academic Council of the College. The College received its initial mandate in 1972, and was primarily established for Teacher Training. The present site, previously a hospital, was occupied in 1983 and has been substantially renovated. During the past year major grants have been received to upgrade and equip the college, including development of new science laboratories.

The present student enrollment is about 1,000, and the main programme is the award of a two-year AA degree, which includes some required science courses (including Marine Biology and Environmental Biology). Graduates from the AA degree can progress to university, and the preferred institutions are the University of Guam, the University of



Hawaii, and San Jose State University. The College is aware of the University of the South Pacific, and a number of CNMI students have attended USP. Other programmes offered by the College include Registered Nursing, a new programme (introduced in September 1990) for Gifted and Talented Students from the High School System (through this programme the students obtain College credits which will enable them to accelerate their University programme later on), Adult Basic Education (especially language) and an Upward Bound Programme.

Attendance at NMC is heavily skewed towards non-CNMI indigenous students, with the majority coming from Micronesia (Yap, Chuuk) and Korea. Currently only about 35% of the student population is indigenous.

Although the NMC was identified as a potential site for the development of aquaculture training and the creation of an aquaculture demonstration centre, there are no plans at present at the college to act on these recommendations. Staff at the college indicated any aquaculture programmes initiated in CNMI were more likely to go to the private, rather than the Public sector.

A Marine Education Specialist works in collaboration with the Public Schools System, Coastal Resources Management, the Pacific Islands Network (based in Honolulu) and the Division of Fish and Wildlife in the Ministry of Natural Resources. He is charged with the task of assisting schools in the development of improved curriculum and teacher training in the marine field, and in the development of a wide-ranging public marine education programme.

#### Scholarships and other financial assistance:

School graduates may apply for a variety of scholarships and financial assistance towards completion of post-secondary education. They are eligible for support under the same U.S. Department of Education regulations available to students on the mainland United States. Within CNMI these awards are administered by the Education and Human Resources Committee, which comprises eleven members: 7 from the Senate, and 4 from the House of Representatives.

Students seeking assistance apply simultaneously to the Committee, and to the Institution of their choice. Under the U.S. Department of Education student aid scheme, students may apply for grants, work-study awards, and loans (c.f. The Student Guide. Financial Aid from the U.S. Department of Education: Grants, Loans and Work-Study, 1989-1990)

Approximately 100 awards are made in any one year. An unspecified number of CNMI students study overseas (mostly mainland US, Hawaii or Guam) using their own funds. A number attend High School overseas, in order to more readily gain entry to tertiary institutions in those countries.

## 6) GUAM

The administration of Guam's Elementary, Junior High and High School education falls under the jurisdiction of the Department of Education (DOE). The DOE provides support to all aspects of School Education, including a variety of teacher and student services, teacher in-service training, and curriculum development. The Government is charged with the responsibility to provide free and compulsory education to all children to the age of 16.

The average teacher:student ratio in Guam Public Schools was 1:17 in 1989, and the per pupil expenditure was US\$2,621 per annum, the highest in the Micronesian region. According to information from the Department of Education, 99% of teachers have a university degree. While the majority of the estimated (1989) 1,585 teachers acquired their degrees at the University of Guam, there are about 200 contract teachers in the Guam public school system, many whom originate from the Philippines.

### Elementary Education [(Grades 1-6 (Elementary); 7-8 (Junior High))].

Students attend a total of 30 Public Elementary and Junior High Schools, and 13 Private Schools. In 1989 a total of 18,155 children were in attendance in grades 1-8 in public schools, with an additional 3,598 in Private Schools.

Major attempts are being made to improve the teaching of mathematics and science subjects, and in 1990 "Project Growing Tree" was introduced. This programme involves input from the DOE Curriculum Development Specialists, from the US Environmental Protection Agency (EPA), from the Guam Energy Office, and from the Guam Department of Agriculture (Division of Aquatic and Wildlife Resources). The programme is intended to give a progressive and integrated approach to the teaching of Environmental Science, from grades 1 through 12, and includes teacher training and in-service components. The DOE Science and Math Consultant is playing a major role in the promotion of this programme, and spends a considerable amount of time in actually teaching in the classroom, visiting every Elementary School on Guam at least once a year. 30 teachers interacted with 20 resource people in the first training workshop in 1990, designed as a "Training of the Trainers" project with follow-up workshops to take place in May 1991.

### Secondary Education: (Grades 9 - 12)

In 1989, a total of 6,804 students were in attendance at Public High Schools, and an additional 1,338 at Private Schools. There are 5 High Schools under the jurisdiction of the Department of Education, and an additional 6 High Schools privately operated. While precise figures were unavailable, the DOE indicated that approximately 35% of High School students continue on to further education, and of these about 25% go to University. Preferred institutions are the University of Guam, with US mainland institutions preferred in California and Washington.

### Tertiary Education:

As noted above, a high percentage of high school graduates enter the **University of Guam** for four-year programmes of study. Those who do not qualify may enter the **Guam Community College**, which offers two-year AA (Associate in Arts) and AS (Associate in Science) programmes, some of the credits of which may be used towards degree programmes at the University of Guam or other institutions.

The University of Guam offers a Major in Biology and, through its Marine Laboratory, has provided some customized sponsorship programmes for Micronesian students attending the U of G. These programmes (4 students to date) have been designed in cooperation with the Chief Fisheries Officers of the countries of origin (FSM; Palau). The Marine Laboratory concentrates on the offering of masters degrees specializing in Marine Biology, and has produced from 69 graduates since the programme was initiated in 1969.

### Scholarship Programmes:

Guam students qualify for all scholarship, financial aid and work-study programmes offered by the United States Department of Education.

### Constraints to the Guam educational system:

Constraints identified in the Guam educational system can be summarized as follows:

- While teachers in Guam are more highly qualified than elsewhere in Micronesia, difficulties will continue to be experienced with teacher recruitment and with the need to import contract teachers from elsewhere who come from a very different cultural and training backgrounds, and therefore may be unfamiliar with the Micronesian way of life.
- Educational programmes in Guam (and elsewhere in Micronesia), still largely dependent on imported curriculum materials, which do not take into account the fact that conceptualization in Micronesian students may be delayed by 3-4 years compared with students from North America. This delay is a particularly important problem in the teaching of the sciences, and is the fundamental cause of difficulties being experienced by Micronesian students attending courses in tertiary institutions.
- There is an urgent need to write school science text books that are relevant to Micronesian island countries; and to provide the necessary infrastructure for teacher in-service training and curriculum development, if the projected manpower needs in science (including marine science) are to be met over the next 10-15 years.
- Although the University of Guam is perceived as the major regional university for Micronesians, the university does not appear to offer a Biology Programme at the B.Sc. level that meets the regional manpower training needs identified in this study.

## **B. MELANESIA**

### **7) PAPUA NEW GUINEA (PNG)**

National administration of the PNG education system falls under the Ministry of Education, which has two principal sections: the Commission for Higher Education (CHE), which is responsible for Scholarships, Research and Development (including the University

of Papua New Guinea and the Technical University at Lae); and the Department of Education, which is responsible for Primary, Lower Secondary and Upper Secondary Education, Alternative Secondary Education, Technical Education and Teacher Education.

Education is not compulsory, although government policy is to provide access for 95% of the children aged 7 - 12 (Grades 1-6). Instruction is in English for all grades. The vast majority of children attend public schools: the only private schools are the International Schools, fee-paying institutions in several centres accommodating children of expatriates and some PNG families electing to send their children to these fee-paying institutions.

#### Primary Education: (Grades 1 - 6, ages 7-12)

Although it is Government policy to provide access for 95% of PNG children at the primary school level, actual participation in 1989 (most recently compiled figures: Education Portfolio, Minister's Brief, 1990) was 73% (477,748 children) of the total eligible (560,800). While actual figures were not obtained, there are significantly more boys than girls attending school, and efforts are being made to change this. Presently, there is an excess of qualified primary teachers.

During the past year, there has been a concerted effort to improve science teaching at the Primary level; this has involved both the curriculum unit, and especially the School Broadcast system. In 1989 the PNG Government commissioned a Radio Science Pilot Project Evaluation (Olsson, 1989). This is intended as an integrated approach to supply audio-visual and written materials to the schools, and to assist teachers in follow-up classroom activities. Another recent initiative has been the introduction of a pre-Primary school programme called "Village Takless Schools", where instruction in the local vernacular is used (a 1990 survey showed that the official number of languages in PNG is 781!).

#### Lower Secondary School: (Grades 7-10)

Progression to Grade 7 is achieved by successfully completing the Grade 6 National Examination. Currently, only 35-40% of students attending Primary school continue on to the lower secondary level. There are 128 Lower Secondary Schools in PNG. The vast majority of school leavers finish their Secondary School on completion of Grade 10 as, previously, entry to tertiary institutions (e.g. UPNG) was possible after successful completion of that grade. National policy is now moving towards requirement of Grade 12 graduation.

There is a shortage of qualified teachers at the Lower Secondary Level, and the government continues to employ expatriate teachers where necessary. Through an arrangement with AIDAB, 15<sup>th</sup> PNG teachers attend, annually, Queensland University of Technology for upgrading. Under another scheme introduced in 1988, students completing Grade 10 attend Secondary Schools in Queensland and, more recently, in the NW Territories. Under this programme, these students have generally returned to PNG for entry into national tertiary institutions for further study.

#### Upper Secondary School: (Grades 11 - 12)

Currently there are only 4 National High Schools, which have an overall capacity of 2000 students (1000 in each of Grades 11 and 12). For those entering these schools there is a very low attrition rate (950 graduated in 1990).

#### Tertiary Education:

There are several tertiary educational institutions within PNG which provide educational programmes related to the needs of both the private and public fishery sector.

1. The University of Papua New Guinea (UPNG), currently offers a B.Sc. degree which includes courses in Fisheries Science, and Marine Biology. Recently, the Papua New Guinea University of Technology fisheries programme was closed down and amalgamated with UPNG. In 1990, the Fisheries Department at UPNG was merged with the Department of Biology, resulting in the re-deployment of three academic staff. Beyond the B.Sc. level, programmes are available at the Honours, Post-Graduate Diploma and Post-Graduate Degree levels, where specialization in fisheries topics is possible.
2. The National Fisheries College (NFC) at Kavieng, operates under the auspices of DFMR, and offers a two year Certificate in Tropical Fisheries course. Between 1979 - 87, 364 students were enrolled in this course, most of whom were grade 10 to grade 12 school leavers. Only a small number of these students found work within the government or industrial sector, and the majority returned to their villages.
3. The Papua New Guinea University of Technology at Lae, provides courses in accounting and business studies, food technology, and mechanical engineering.
4. The Papua New Guinea Maritime College at Medang offers training for Certificates of Competency required to operate merchant vessels and the larger fishing vessels.
5. The Administrative College of Papua New Guinea operates under the auspices of the Department of Personnel Management and offers a wide range of courses of varying length for state government employees in management, and professional studies.

6. The **Regional Administrative Colleges** provide training for provincial government personnel in management studies, communication skills, accounting and financial management and the training of trainers.
7. Several **Technical Colleges** offer pre-employment technical training, extension courses and technician level courses, in a range of engineering subjects; of particular interest to the fisheries sector are diesel and refrigeration mechanics.
8. The **Milne Bay Fishing Authority** previously operated a fisheries training school at Kuiaro which introduced high school dropouts from villages in the province to a range of practical fisheries related activities, through a two year programme. The Authority has recently been disbanded.

#### National Scholarships Scheme:

The National Scholarships Scheme is administered through the Commission for Higher Education (CHE). Scholarships for attendance at tertiary institutions are available for Grade 10 and Grade 12 graduates. Tertiary institutions include vocational training, Forestry and Agricultural Colleges, the College of Education, UPNG and the Technical University at Lae. Between 600 and 700 graduates from Grades 10 and 12 are eligible for scholarships in any year. Selection is based on their overall school performance. There are no national funds made available to support attendance at foreign tertiary institutions, although some self-supported students go to them.

#### Constraints of the PNG Educational System:

There are some serious constraints inherent in the PNG educational system that are currently being addressed by the Ministry of Education, in order to meet future national manpower needs.

- The participation rate at Primary level (73%), while a significant improvement from 56.5% (1975) still falls far short of the national goal to provide access to 95% of children aged 7 - 12.
- There is a serious drop-out rate beyond Grade 6, with only approximately 1% of the Grade 1 cohort graduating from Grade 12.
- The acute shortage of Upper Secondary Schools mitigates against the government's declared intention to increase participation in Grades 11 and 12.
- There is an over-supply of Primary Teachers, and a shortage of Secondary Teachers.
- The serious drop-out problem has exacerbated the normal difficulties created by youth unemployment in the urban centres.

## 8) SOLOMON ISLANDS

Education at the primary, secondary and tertiary level in the Solomon Islands falls under the general aegis of the Ministry of Education and Training, which oversees curriculum development, examinations and teacher training. The Provincial Governments are responsible for the delivery of primary and secondary education. The Ministry of Education and Training has direct responsibility for national Secondary schools, the School of Education and Cultural Studies, the National Archives, the National Library and the National Museum, as well as the Solomon Islands College of Higher Education.

National policy requires compulsory attendance at school to the completion of Primary education (Class 1 - 6; ages 6 - 13). Following Class 6, successful children may progress to the Secondary system (Forms 1 - 5, and to form 6 in some schools). The Curriculum Development Division produces all school materials for primary and secondary schools. The curriculum has a strong national focus, although school text books from Australia, New Zealand and the United Kingdom still form a strong element of materials used. The language of instruction is English throughout the school system, although this is phased in (with pidgin) during the early primary years.

### Primary Education: (Class 1 - 6)

Primary Education is from Class 1 - 6. In some districts, a Kindergarten programme has been introduced, with children admitted from age 4. Details on the percentage participation by children at the elementary level was not available, but officials indicated that there are insufficient schools and teachers to accommodate all eligible students in the Class 1-6 age group, especially in the more remote rural areas. The 1990 cohort of students completing Class 6 in 1990 was 6,972.

### Secondary Education: (Forms 1 - 6)

Secondary Education is provided by National, Provincial and Church-run Secondary Schools. There are eight National Secondary Schools. two of which offer Forms 1 to 6, the remaining four of which offer Forms 1 to 5 only. There are also eight Church-run Secondary Schools. In addition, there are 14 Provincial Secondary Schools. The Church schools offer precisely the same curriculum as the National and Provincial Schools, and the children attending them take the same nationally organized examinations.

Entry to Secondary School is on the basis of performance in the Secondary School Entrance Examination taken at the end of Class 6. Of the 6,972 students who took the examination in 1990, 596 qualified for admission to National Secondary Schools, and 2,147 qualified for admission to Provincial Secondary schools (just under 40% success rate). As there are insufficient places to accommodate all of the successful students, a National Rank Order is established, with the top students being selected for the available places. In 1990, only 196 successfully qualified to proceed to Form 6.

### Tertiary Education

At the end of Form 6, students sit national examinations for University entrance, and the Pacific Schools Certificate. Students wishing to go to University must apply to the national Overseas Training Unit, which makes the selection of successful candidates for recommendation to the Public Service Commission. Awards are made for students electing to study in areas identified as national priorities according to the National Corporate Plan.

#### **Solomon Islands College of Higher Education (SICHE)**

The Solomon Islands College of Higher Education (SICHE) was formed in 1984, having evolved from the former Honiara Technical Institute. SICHE offers a broad range of programmes in vocational, technical and professional disciplines. The focus for fisheries and marine programmes is in the School of Marine and Fisheries Studies (see below). Approximately 1,500 students are currently in attendance at SICHE (54 in Marine and Fisheries Studies), with the highest numbers in Business. SICHE has a policy to continue to upgrade its programmes, staff and resources, to improve the country's self-sufficiency in tertiary education and training.

#### **School of Marine and Fisheries Studies (SICHE)**

The School of Marine and Fisheries Studies (T.S. Ranadai) was founded in 1960 as part of the Solomon Island Marine Division to service the requirements for manning the government vessels. It became a section of the Solomon Island College of Higher Education in 1984 when that institution was formed, and fisheries training was added.

The Ranadai campus has accommodation for 56 persons either in 10 person dormitories or 2 person cabins. The facilities include a radar and navigation simulator and a number of small craft for practical exercises.

There is a staff of 9 lecturers teaching a variety of subjects which include all of the statutory certificates required to man Solomon Islands vessels up to Master Pacific Islands. Their fishing related courses include a 9 weeks basic Fishing Techniques course, a 9 week Advanced Fishing Techniques course, and a 9 week Restricted Fisherman's License course. The school has also run courses for rural fishermen and hopes to be able to continue with these as funds are made available.

In addition, the School has cooperated with the Fisheries Division in running an annual 20 week course to upgrade the skills of Provincial Fisheries Officers. This course has now been attended by all appropriate fisheries staff and consideration is being given to replacing it with a course of a higher standard. Every support should be given to this initiative.

The proposed move of the USP Institute of Marine Resources (IMR) to Honiara has important implications for the School of Marine and Fisheries Studies, and for SICHE as a whole. This collaboration could be to the mutual advantage of IMR and SICHE, and should be pursued.



## 9) VANUATU

Education in Vanuatu reflects the difficulties of coordinating the dual English/French educational systems which operated before independence. Major efforts have been made to standardize the curricula in the dual system and generally upgrade educational opportunities; especially at the primary level. While it is accepted that education must continue in both languages, there are attempts to have this done within a single school system. Two junior secondary schools are now bilingual. Education constitutes approximately 30 % of the recurrent budget of Vanuatu and is structured in three cycles.

1. Primary Cycle (6 years)
2. Junior Secondary Cycle (4 years)
3. Senior Secondary Cycle (3 years)

### The Primary Cycle.

The curriculum has been standardized in both French and English systems and there are now sufficient places to accommodate all 6 year olds into the first year of the primary cycle. At the present time, 100% attendance has not been achieved due to the difficulty in getting children to primary school in remote areas; however, it is estimated that 90% of all children attend primary school.

### The Junior and Senior Secondary Cycles.

It is estimated that about 25% of children completing primary education enter the 17 Junior Secondary Schools and about 10% of these enter the 3 Senior Secondary Schools (2 English, 1 French). In 1990, approximately 1000 students graduated from Primary to Junior Secondary and 90 students advanced from Junior Secondary to Senior Secondary.

The Senior secondary cycle ends at year 13 and this is still one or two years before matriculation. This is giving Vanuatu major problems in getting persons qualified to enter degree programmes. The failure rate of Vanuatu students attending the USP foundation year in Suva has been high. Sending students to Suva is being phased out, and Foundation will be conducted at the extension center of USP in Vanuatu in the future. It is hoped, by educational authorities, that this will prove more effective. It is the longer term objective (perhaps five years) to increase the Senior Cycle to matriculation level.

In addition to attaining foundation through the USP Extension Centre, 14 persons a year are selected for scholarships provided by the New Zealand government which will qualify them for matriculation at a New Zealand High School, and further education at a New Zealand University or Technical Institute. The French Embassy also runs a private school which leads to the Baccalaureate exams through New Caledonia and French Polynesia. Examination for the Baccalaureate was stopped in Vanuatu in 1990. There is now a scheme which allows francophones to gain access to the Université Polynésie Française du Pacifique in Tahiti. There is also an number of persons undergoing secondary education overseas at personal expense.

### Tertiary Education

There are two institutions in Vanuatu conducting post secondary education, The Teachers Training College and the Institute Nationale de Technologie de Vanuatu (INTV).

#### **Teachers Training College**

The Teachers Training College annually enrolls about 50 persons seeking qualifications to teach primary school in the English system. It has recently started a 2 year course for 25 Junior Secondary teachers. A scheme to recruit Junior Secondary teachers for the French system is nearing completion. It is considered that by 1994 all teachers in primary and junior secondary will be Ni-Vanuatu.

#### **Institute Nationale de Technologie de Vanuatu**

INTV was set up before independence to teach technical subjects in the French language. It currently has an enrollment of 140 French speaking students and a recent enrollment of around 40/50 English speaking students studying a variety of technical subjects (building construction, diesel mechanics, typing, etc) as well as math, science and social science. The Institute has a capacity to take up to 640 students and, following a general policy for all schools, the department of Education intends to encourage it to develop into a bilingual establishment.

### **10. FIJI**

Education in Fiji falls under the aegis of the Ministry of Education, Youth and Sports; a separate Ministry of Education will be re-created in 1991. The Ministry is responsible for pre-school, primary, secondary, technical and vocational education, teacher training, as well as a variety of ancillary and support services including Nasinu Residential College, the Fiji Institute of Technology, careers services, a School's Broadcast Unit, a Curriculum Development Unit, an Educational Resources Centre, the Fiji Museum and the Fiji Arts Council [Fiji Ministry of Education Annual Report for 1987 (1990)]. School programmes fall under the administrative control of the Deputy Permanent Secretary (Professional), while technical, vocational and related programmes fall under the Deputy Permanent Secretary (Technical / Vocational). For administrative purposes, Fiji is divided into four Education Divisions, which in turn are subdivided into nine Education Districts.

Attendance at school is not compulsory, although there is a very high participation rate at the primary level (99.5% of the 6 - 11 year age group). Non-government schools play a highly significant role in the Fijian educational system. Of 860 schools in Fiji (1987), 29 were government owned and operated, and 831 are non-government, controlled, by a total of 38 different agencies within the country. Principal agencies are Committees, the Roman Catholic Church, the Methodist Church in Fiji, Seventh Day Adventist Mission, Arya Pratinidhi Sabha of Fiji, Fiji Muslim League and Then India Sanmarja Ikya Sangam. Although there is such a wide range of administrative bodies involved in education in Fiji, the curriculum is a national curriculum.

### Pre-School Education:

The most recent statistics (Ministry of Education, 1990) give a total of 6,217 children aged 3 - 5.5 yrs attending a total of 335 recognized pre-schools served by a total of 335 teachers.

### Primary Education: (Class 1 - 6, or 1 - 8)

There are two kinds of primary schools in Fiji; those catering for Classes 1 - 6, and those catering for Classes 1 - 8. 1990 statistics (for 1987) showed a total of 14 government primary schools with an enrolment of 5,802, and 663 non-government primary schools with an enrolment of 128,538. There were 4,425 primary teachers, giving an overall teacher: student ratio of 1:30. Statistics for 1990 gave the total primary roll as 143,552 (an increase of 9% over 1987), and a Class 1 cohort of 21,850 pupils.

Children attending schools covering Class 1 - 6 sit the Fiji Intermediate Examination at the end of year six, and those successful enter Secondary School at Form 1 level. Those attending primary schools covering Classes 1 - 8 do not sit the Intermediate Examination, but take the 8th year examination at the end of year 8; successful candidates enter Secondary School at Form 3 level. Recent statistics indicate that there is an attrition of the year one entry cohort of 25% by the end of year 8 (or Form 2).

### Secondary Education: (Forms 1 - 7)

Secondary schools in Fiji cater for students from Forms 1 to 7. Form 7 is a recent addition, following the cancellation of the Foundation Programme at the University of the South Pacific. In addition, multicraft, adult education and other vocational courses are taught in selected schools. There are 140 secondary schools in Fiji (110 secondary, and 30 junior secondary), of which 11 are government schools, the remainder non-government. In 1987 there were 43,382 students in attendance, and in 1990 52,536 (increase of 21%); not included in these numbers are students attached to secondary schools and engaged in vocational, multicraft and other programmes. In 1987 (most recent published statistics) there was a total of 2,572 teachers in the secondary system (319 in government schools, 2,254 in non-government), giving an overall teacher:student ratio of 1:17.

There have been important changes in the Fiji secondary system in recent years, partly because of the introduction of Form 7, and also because of the nationalization of the school examinations. Currently, students sit the Fiji Junior Examination at the end of Form 4 (year 10): this is a form 5 qualifying examination. At the end of Form 6 (year 12) they sit the Fiji School Leaving Certificate, which is the principle level of entry into the job market. Initially, students who obtained at least 35 marks in English and an aggregate of 200 marks in New Zealand University Entrance Examinations (sat at the end of Form 6, and now replaced by the Fiji School Leaving Certificate) qualified for entry to USP Foundation Year, now Form 7. A controversial proposal has been made that the required aggregate should be raised to 250 marks; it is expected that this will be implemented in 1991, if approved by Government. At the end of Form 7, students sit the 7th Form Examination, which qualifies them for entry into first year at USP.

There is a significant attrition between Form 3 and Form 6 (as high as 63.5% in some years, and currently approximately around 53%).

With the termination of Foundation Year at USP there will be a major stress on the Fiji school system, since the approximately 250 students normally sponsored each year for USP Foundation will have to be accommodated by Form 7, in addition to those already in the school system at this level (1,391 in 1990).

The Ministry has a policy to significantly increase the retention of students in the system; an important element of the strategy is to "vocationalize" the curriculum to the benefit of students less academically inclined (Ministry of Education, 1989). Vocational options are now available through 36 schools sponsored by the government. Students completing the 2-year vocational programme sit the Fiji Vocational Certificate examinations (accredited and run by the Fiji National Training Centre). Successful candidates are awarded an FNTC Class 3 trade certificate, which enables them to enter the work force with this basic qualification. In 1991, approximately 800 students will complete the programme.

In addition, the current educational development plan calls for an increase in the use of school-based assessment, allowing as much as 50% in-class assessment in some subjects. Efforts are being made in all subjects to introduce life-skill components, to make the curriculum more relevant and exciting. There is also discussion on-going to consider elimination of the Fiji Intermediate Examination.

In 1989, a World Bank review of the Fiji Educational system was critical of the technical and vocational programmes of the Fiji schools, arguing that they were too decentralized and that they should be concentrated in 3 centres. The government's counter argument is that vocational skills training is important in rural and isolated areas, and should be available to all students.

There are plans to introduce marine topics into the secondary school curriculum, with a focus on aquaculture because of its importance in rural communities.

### Tertiary Education:

The principle tertiary institutions in Fiji are the University of the South Pacific (main campus), the Fiji Institute of Technology, the Fiji School of Medicine, Teacher Training Colleges (Lautoka Teachers' College; Corpus Christi Teachers' College; Fulton Missionary Teachers' College) and the Fiji National Technical College.

### **University of the South Pacific (USP)**

USP was established in 1969 as a regional university. It currently serves 12 Pacific Island countries. The main campus is at Laucala Bay, Suva. There is a second campus at Alafua, Western Samoa (School of Agriculture) and ten Centres that deliver extension and continuing education programmes.

Fiji is the region's most important contributor to USP; in 1987 it contributed FJ\$6,194,700 to the university; approximately 250 Fiji students enter the University each year.

The training of fisheries personnel has been an important role of the university, since its establishment in 1978 of the Institute of Marine Resources. A total of 130 candidates have completed the USP Diploma in Tropical Fisheries (IMR Annual Report, 1990). Following a review (Clift Report) significant changes will be made to the DTF programme, in keeping with regional needs. In recognition of the importance of marine studies to the region, a new Marine Studies Programme will be introduced at the University, commencing in 1992 (South, 1991). This programme will not only expand certificate and diploma options in Marine Resources Management, but will also significantly increase the university's teaching and research capabilities in marine studies, and will provide students with options to complete undergraduate and post graduate diplomas and degrees in marine science.

In 1992, the Institute of Marine Resources will begin a phased relocation to Honiara, Solomon Islands.

### **Fiji Institute of Technology (FIT)**

The FIT consists of 9 schools situated in the capital city of Suva, with the Western Division Technical Centre at Ba. It is administered through the Ministry of Education, Youth and Sports, and in 1987 (most recent published statistics) had a total enrolment in Semester 1 of 1,613 students.

The School of Maritime Studies is located at Laucala Bay, adjacent to the USP Institute of Marine Resources. USP has had a long-standing cooperation with the School of Maritime Studies, but this will end with the revision of the Diploma in Tropical Fisheries. The School of Maritime Studies has major plans for expansion to accommodate cadet programmes required for certification of seamanship according to National regulations in Fiji. In addition, FIT has indicated that it is also intending to develop new programmes in Fisheries Technology.

### **Fiji National Training Council (FNTC)**

The Fiji National Training Council was established in 1973 under the Fiji national Training Act Cap. 93. It is a statutory organization within the ambit of the Ministry of Employment and Industrial Relations, and has the responsibility of promoting systematic training in all areas of industry and is empowered to oversee and exert control over training at all levels (FNTC Annual Report, 1989). The FNTC is headquartered in Narere, near Suva. It functions as an NGO, being entirely self-funded. The Fiji National Training Levy Order imposes upon every employer a levy in respect of all employees (except those exempted under the order), based on 1% of the total of the gross wages paid by the employers. Income for 1989 was FJ\$3.259 million. The objectives of FNTC are to ensure that:

1. the available resources and facilities are coordinated to provide an adequate supply of persons with the requisite skill, knowledge and experience of employment;
2. the nature, quality and efficiency of training shall be appropriate and adequate to meet the needs of employers and employees;
3. the cost of training and administration are shared between levy paying employers.

FNTC is structured so that it can serve two functions. The primary function is training and development, which is divided into a total of eleven industry training boards. Programmes include Aviation and Travel; Commercial and Administration; Construction; Electrical Engineering; Engineering; Hotel and Catering; Manufacturing; Marine and Port; National Productivity. These boards assist employer organizations to identify training needs, formulate training objectives, design training programmes, allocate available resources, and generally ensure that present and future human resource needs are met both at the national and the individual employer of industry level ( FNTC Handbook, 1991).

FNTC has no direct involvement in training in the marine sector, although it collaborates with the Fiji Institute of Technology marine training programme. The Council acts as an accreditation and testing agency for industrial arts programmes run by selected Fiji secondary schools, and works in collaboration with the University in areas such as management training. In addition to offering scholarships for students attending USP and FIT, the Council also awards two scholarships annually for students to attend programmes in New Zealand or Australia (e.g. Civil Engineering). The Selection Board is a tripartite one between FNTC Management, Government, Workers and Employers representatives. FNTC programmes are separate from in-house government training programmes, and there is no conflict or overlap with them, or with the apprenticeship programmes run by FIT. During the past year, FNTC offered special programmes for unemployed school leavers, and these were successful.

Once workers are qualified through the FNTC, their qualifications have an international recognition. This has the potential of leading to a skilled "brain drain" and, in this respect, FNTC works closely with the Australian and New Zealand Embassies.

## **C. POLYNESIA**

### **11) TUVALU**

#### **Elementary Education: (Class 1 - 6)**

School education is compulsory until the age of 15. Children attend Elementary School from classes 1 - 6. Prior to 1991, they were required to sit an entrance examination for progression to forms 1 - 5, although this will now be delayed until form 2. According to the Task Force Report on "Education for Life", it is a goal of the Tuvalu Government to

retain more students in the country for secondary education, and the delay in qualifying examinations is the beginning of the implementation of the new system.

#### Secondary Education: (Forms 1 - 5)

Each year, 60 - 70 students qualify for admission to the only Secondary School in Tuvalu, the Motufoua Secondary School on Vaitupu Island. This school takes them up to Form 5; it is a boarding school with fees (1990) of AUD\$60.00/term. Current changes in the system, as mentioned above, will ultimately increase these numbers. The Motufoua Secondary School presently follows the Fiji School Curriculum.

On completion of Form 5 (age 16-17), the students with the best academic record are selected for Scholarships to further secondary education. There are more students who qualify than there are scholarships, which number about 15 per year. In addition, 15 students obtain scholarships to other post secondary institutions (Fiji Institute of Technology; Solomon Islands College of Higher Education) and nursing schools. Some also attend the Tuvalu Maritime School to undertake training as a general purpose rating in an overseas merchant shipping company. A few Tuvaluan students may be enrolled in overseas schools as private students.

Government Departments (such as Fisheries) may select some Form 5 leavers as unestablished staff, with a view to further development.

#### Post-Secondary Education:

In selecting students for post secondary education, it is apparent that career paths are determined even at the Form 5 level, and certainly at the completion of Form 7. The Government Staff Development Unit therefore plays an important role well before the completion of post secondary qualifications. Students are advised of courses/programmes that they should take; these determined, in Fisheries for example, on the recommendation of the Chief Fisheries Officer to the Training Officer and Staff Development Officer. Final approval for scholarships rests with the Prime Minister. Students who wish to change their programme of study can do so only with permission of the Government. Because of this pre-selection for a government post at such an early age and the lack of promotion criteria, short of a university qualification, vacant positions can be blocked for staffing purposes for a period of up to seven years, unless filled by expatriates as has been the case for most positions.

## **12) COOK ISLANDS**

The current education system in the Cook Islands has evolved to reflect the policies of the British and then later the New Zealand administrations of the Cook Islands. In 1975 it was taken over by Cook Islands administrators, who were required to respond to the first ever local identification of the needs of the Cook Islands people.

While strenuous efforts were made to make the necessary changes, by 1983 the system had exhausted its capacity to respond to national demands (Polynesia Way, 1989).

In 1989, a review of Cook Islands Education was commissioned, with a view to making necessary recommendations to improve the system. The review was conducted by a Task Force, as directed in the Election Manifesto of the Government. Rather than "cosmetic" in nature, the results of the Task Force's deliberations proved that radical and far-reaching changes to the system were needed, if its shortcomings were to be adequately addressed.

Following the Task Force's Review, an Implementation Team (I-Team) was charged with the responsibility of implementing the Review's recommendations, and this process is just getting underway. Recommendations and / or changes include the following:

- \* Introduction of a new Education Act to establish a system of supervised School-Based Management.
- \* Formation of a Council of Wisdom that will oversee the total system, ensure fairness and equality and advise on national objectives.
- \* Formation of a National Education Council that will set national policy and ensure that all aspects of accountability are carried out.
- \* Formation of a Permanent Advocacy Forum to receive complaints, advice and suggestions from the general public.
- \* Formation of Home-and-School Associations, and the election of Boards of Trustees who will be responsible for all schooling in each province, under the Education Council.
- \* Extension of the school leaving age to 16 and voluntary pre-school / day care education lowered to 2 years.
- \* All children to be taught bi-lingually.
- \* School graduation to Grade 12, with the possibility of students moving as quickly through the grades as their ability warrants.
- \* Introduction of a national curriculum comprising three compulsory components (Formation, Self-knowledge and Discovery).

In addition, there are plans to introduce vocational education in the school system, and the inclusion of curriculum elements dealing with agriculture and fisheries.

The Cook Islands Institute of Higher Education will be established as an autonomous body owned jointly by Government and Trustees, and will be ultimately responsible for all post-school training and education in the country. The proposed components of the Institute will comprise:

- An Associate University of Maori and Polynesian Studies
- Colleges of Higher Education



- Community Colleges
- Training Schools
- A Resource Centre supplying all national education services.

According to current legislation, education is compulsory for all children aged 5 - 15 years. Pre-schooling is more or less universal, and there are plans to make this available from the age of two years in the future. The school-leaving age is scheduled to increase to 16 in the future.

In 1989 there were 5119 children in attendance at school (K through Form 7 = Grade 12); of these, 1214 were in the pre-school programme, leaving 3905 in the Primary and Secondary systems. In the period 1971 - 1989, the Cook Islands population of school-aged children dropped from 7068 to 3905, a 45% reduction. This drop, which is still continuing, has been due to migration, and to the effects of a reduction in the birth rate following a family planning campaign.

#### Pre-School (ages 3 - 5)

Pre-schooling is essentially private and community-organized, although in practice the Government provides paid, trained teachers. Completion of the pre-school programme prepares children socially and academically for the Primary School programme, and has proved very successful.

#### Primary Education (ages 5 - 12 years; Grades 1 - 8 (7 & 8 are equivalent to New Zealand Forms 1 and 2)).

There are 39 Primary Schools served by 290 teachers (1991). The entry cohort in the Cook Islands Primary School system (Grade 1) is approximately 400 students. Primary School teachers are trained at the Cook Islands Teachers College.

#### Secondary Education (ages 12 - 18; Forms 1 - 7)

There are 10 Secondary Schools, attended by approximately 2,500 students (1991), with 150 teachers. The majority of secondary teachers are university-trained, and most have a degree or diploma.

In Form 5, students sit the Cook Islands School Certificate (the brightest students may sit it in Form 4). There is a significant drop-out of students at this stage, so that by the time students sit the New Zealand School Certificate in Form 6, only 20% of the original cohort entering Secondary School remains (currently a total of 30 students). Of these 30, only 50% normally successfully complete the University Entrance examination, which means that of the original cohort of 400 entering Primary School, only 15 students (approximately 4%) may go on to University.

#### Scholarship Selection Committee:

Scholarships are awarded on the recommendations of the Scholarship Selection Committee, overseen by the Public Service Commission.

Scholarships are awarded on the basis of the manpower needs of the Cook Islands. They are open to all qualified Form 7 leavers, and there is an annual total of approximately 100 applications. Apart from school-leavers, applicants include those who have upgraded their qualifications part-time, such as completion of Fiji Form 7 through the USP Cook Islands Centre. Because of a high failure rate at University, there is presently a requirement that Form 7 leavers complete a years work experience before going on to University.

#### Tertiary Education:

In-country tertiary education opportunities include the Cook Islands Teachers Training College, and the Nurses Training School, as well as the other training opportunities such as Police Cadet training; an apprenticeships scheme (e.g. mechanics; electrical; plumbing; agriculture); hospitality training (under the Tourism Department); pilot training and seamanship training (under the Ministry of Trade, Labour and Transport); fisheries training (under Fisheries); and some specialized training through the Cook Islands-administered branch of the New Zealand Department of Scientific and Industrial Research (DSIR).

### **13) WESTERN SAMOA**

Education in Western Samoa is administered by the Ministry of Education, and is currently in a state of change following revisions in educational policy made in 1988 (Annual Report of the Department of Education, 1989).

Currently, schooling in Western Samoa is not compulsory and attendance fees are levied. The system is divided into primary (years 1 - 8) and secondary levels (years 9 - 13). The secondary schools are divided into Junior Secondary Schools (which cater to years 9 - 11 only) and Senior Secondary Schools (which cater to years 9 - 13). Pre-schooling is a private undertaking.

A very significant role is played by Mission Schools; 1989 statistics show that 20.8% of pupils enrolled in all levels of schooling in the country (a total of 10,234 students; 45% of all Secondary School pupils, and 13.5% of primary school pupils) were attending Mission schools. Administratively, the Mission schools do not come under the jurisdiction of the Department, although some attempt to follow the national curriculum, and there is participation by church educators in curriculum development and examination committees. The Department includes Mission teachers in in-service training programmes, and oversees the apportionment of government grants for non-government schools.

Of various proposals mandated by the 1988 changes in educational policy, the following were significant in that they required an expansion of the mandate of the Department of Education (1989 Annual Report):

- 1) the encompassing of pre-school education with its affiliated requirements under the jurisdiction of the Education Department;

- 2) the establishment of two new academic senior secondary schools, one in Savai'i and the other in Opolu.
- 3) the upgrading of the technical training institute at Vaivase.

The Department was unable to supply statistics concerning the percentage participation by the school-age population of Western Samoa, or with accurate information on the drop-out rate. In general, however, it was indicated that there is a high participation rate in the primary system, and that a significant number of children return to the village following completion of year 8.

#### Pre-School Education: (ages 3 - 4 years)

Pre-schooling in Western Samoa started in 1978 as a private venture, and although Government has shown increasing recognition, pre-schooling is still not fully supported by government. In 1989 (1989 Annual Report) 2,007 children were enrolled in 23 pre-schools.

#### Primary Education: (years 1 - 8, ages 5 - 12)

In 1989 a total of 37,833 children (32,721 government; 5,112 non-government) were enrolled in a total of 159 primary schools (141 government, 18 non-government). All except one of the primary schools are owned by the villages, and are staffed by Government teachers, meaning that only one of the schools is entirely owned and staffed by the Government. The schools were staffed by a total of 1,567 (1,228 government paid) teachers (average teacher:student ratio 1:24). A National Selection Examination is administered at the end of year 8, and in 1989 a total of 3,788 pupils from 155 primary schools sat the exam.

#### Secondary Education: (Junior Secondary Schools, years 9 - 11; Senior Secondary Schools, years 1 - 13).

In 1989 there were 11,268 pupils enrolled in Secondary Schools (6,146 in government schools, 5,122 in non-government schools). Of 25 government secondary schools, 21 are Junior Secondary Schools, and only 4 are Senior Secondary Schools; there are 17 non-government Secondary Schools.

At the end of year 11, students sit the Year 11 National Examination, taken in 1989 by a total of 2,465 students. In 1989 for the first time, the new Western Samoa School Certificate Examination (WSSCE) (year 12) replaced the New Zealand School Certificate Examination, and the Pacific Secondary School Certificate Examination (PSSCE) replaced the New Zealand University Entrance Examination.

With the assistance of the FAO/UNDP Fisheries Resources Adviser, the Department of Education Curriculum Development Unit is preparing a new book on Fisheries and Marine Science, as the first part of an ongoing marine and environmental education programme being introduced as a compulsory subject for Western Samoan Junior Secondary Schools in 1992. In addition, there are plans to improve marine-related and environmental aspects to the curriculum through assistance from the South Pacific Regional Environment Programme (SPREP).

### Tertiary Education:

The Department of Education administers three tertiary institutions: the Primary Teacher's College, the Secondary Teacher's College, and the Western Samoa Technical Institute. The National University of Samoa (NUS) is autonomous.

There is an acute shortage of teachers in Samoa, and the Teachers Colleges are unable to produce enough teachers to replace the annual attrition. All primary teachers are trained in Western Samoa, and none has a university degree. While many teachers in the secondary system have university degrees, a high proportion of them entered teaching without specific teacher training, which means that there is a largely untrained (in educational areas) and relatively inexperienced work force.

There are plans to amalgamate the two Teacher's Colleges, and it was learned that they may be absorbed into the National University of Samoa at some time in the future.

The Western Samoa Technical Institute has been placed high in the priorities for future development, with aspirations for it to become a polytechnic. In 1989 there was a professional staff of 24, almost half of whom were overseas volunteers, and an enrolment of 343 students.

### **The National University of Samoa**

The NUS was established in 1983, with a programme comprising Foundation Year only. There is a now major concentration on a University Preparatory Year (UPY), and Degrees (B.Ed. and BA) were introduced in the late eighties. In 1990 9 BA graduates and 22 B.Ed. graduates completed their degrees. There are plans to introduce a B.Sc. degree in the future. A certificate and diploma in Commerce programme has a current (1991) enrolment of 150 students, while the UPY programme has 130. Currently, the NUS has two faculties, Arts and Science, and a professional staff of 24 full-time, and 11 part-time lecturers.

Students attending NUS normally do not pay fees, apart from those taking the Certificate and Diploma in Commerce programmes. Students completing the UPY continue on to overseas universities (mostly New Zealand, Australia and Fiji); some have directly entered second year, and one NUS student has progressed as far as a masters programme at the University of Melbourne. There is every indication that the NUS will continue to expand in the future.

### University of the South Pacific

USP operates a USP Extension Centre in Apia, located in the same buildings as NUS, and the USP School of Agriculture, at Alafua. There appears to be little communication or cooperation between the USP Extension Centre and NUS, although NUS uses the teaching laboratories at the Alafua Campus on a cooperative basis, at no charge. Currently there are 229 Western Samoan students enrolled in regular courses at the USP Extension Centre, and an additional 21 in Continuing Education programmes. The USP Ocean Resources

Management Programme has begun offering courses by Extension, and three students are enrolled in the course Introduction to Ocean Resources Management.

Constraints to the Western Samoan Educational System:

- 1) An acute staffing shortage and a high attrition of teachers to overseas postings.
- 2) A need for more training of Primary School teachers.
- 3) A large number of untrained teachers at the Secondary level (many have degrees, but no education training), leading to an untrained work force and a predominance of young and inexperienced teachers.
- 4) Inadequate recruitment planning.
- 5) Financial constraints, and bureaucratic delays in implementation of aid-funded programmes.
- 6) The need for curriculum review, and for close monitoring of curriculum through a centrally coordinated system.
- 7) Heavy reliance on non-government schools, especially at the secondary level.

#### **14) AMERICAN SAMOA**

The administration of Education in American Samoa falls under the aegis of the Department of Education, with the chief officer being the Director of Education, appointed by the Governor. There are two Deputy Directors - for Instruction, and for Business Services. Programme Directors reporting to the Deputy Director (Instruction) are: Early Childhood, Elementary Education, Secondary Education, Special Education, Vocational Education, Curriculum, Library Services, Testing and Evaluation, as well as offices dealing with Certification and Staff Development, and Special Projects. Business Services include Personnel, Transportation, Food Services, Maintenance, Budget and Finance, and Federal Grants (Think Children, Department of Education Annual Reports).

The Code of American Samoa, Title 18, Sec. 5 states: "Attendance at a public or private school shall be required of all children between 6 and 18 years of age inclusive, or from grade one through 12, unless excused or excluded for good reason by the Director of Education." In 1991 the total enrollment of children in American Samoan schools was 15,059, of which 12,770 were in public schools, and 2,289 were in private schools. These figures compare with a total of 11,718 in 1981 - 1982 (9,896 public; 1,822 private), an increase of 28% in a ten-year period.

### Elementary Education(Grades 1 - 8)

There are 22 Public and 7 Private Elementary Schools in American Samoa. Four of the public elementary schools are on the outer islands (1 on Swains Island, 3 on the Manu'a Islands), with the remainder being on Tutuila. A total of 7,200 children were in attendance at Public Elementary Schools in January 1991, and 1,395 in Private Elementary Schools (84 % public, 16% private). The 1991 cohort of Grade 1 pupils is 1,002, compared with the Grade 8 cohort of 869 (Department of Education, Office of Student Services, Data Research, January 1991). Approximately 18% of elementary teachers have BA or BS degrees, a further 66% have AA degrees, and 14 (4.6%) have MA degrees. There is a very low incidence of drop-outs from the elementary system, but there are fairly regular transfers into and out of the system.

### Secondary Education: (Grades 9 - 12)

There are 6 Public Secondary Schools in American Samoa (one on the Manu'a Islands, the remainder on Tutuila), and two private Secondary Schools, with a total attendance in 1991 of 3,447 (3,037 public, 88.11 %; 410 private, 11.89%). The 1991 cohort of Grade 9 students is 1,002 (all schools combined) and of Grade 12 students is 710 (all schools combined). 65% of secondary school teachers have a BA or BS degree, and 13% have an MA degree.

### Tertiary Education:

The American Samoan Government offers a scholarship programme under the auspices of the Scholarship Board, which is administered by the Department of Education. Selection for scholarships is based on academic achievement and financial need. Students may be supported for studies at the American Samoa Community College, or at colleges and universities in the United States. Well over 100 scholarships are awarded annually, of which approximately 50% may be held by students attending the American Samoa Community College.

## **15) TONGA**

Education in Tonga falls under the jurisdiction of the Ministry of Education, and is governed by the 1974 Education Act. Educational development is under the broad aims laid down by DPV (1986 - 1990), currently under review in preparation for DPVI (1991 - 1996; cf. Government of Tonga Ministry of Education Annual Report for 1989). The Ministry oversees all government operated Primary and Secondary Schools, and several tertiary institutions.

The Government plays the major role in primary education, but a small role in secondary education, which is managed by eight non-government educational authorities: the Free Wesleyan Church; the Roman Catholic Church; the Church of the Latter Day Saints; the Free Church of Tonga; the Tokaikolo Fellowship; the Seventh Day Adventist Church; and 'Atenisi Institute, a private organization.

A cornerstone of the national educational system is the cooperation between government and on-government schools. There is close collaboration in matters of policy, curriculum development, examinations and access to tertiary scholarships. Non-government primary and secondary schools follow the prescriptions, syllabuses and curriculum materials developed by the Ministry of Education's Curriculum Development Unit. Government provides direct financial assistance to non-government schools, on the condition that the grants are not used to supplement teachers' salaries and are not spent on capital items.

#### Primary Education (classes 1 - 6)

In Tonga, primary education has been compulsory since 1846. According to the 1974 Act (which became effective in 1975) all children between the ages of 6 and 14, and living within reach of a Government primary school, are required to attend school unless they have already completed 6 years of primary education.

In 1989 there were 113 Primary Schools (102 government, 11 non-government), with a total enrolment of 16,310, of which 93.4% (15,215) were in government schools, and 1,095 were in non-government schools. There were 540 teachers (480 in government schools), 70.4% of which were female. The student:teacher ratio (all schools combined) was 1:30.

The majority of Tongan Primary Teachers have been trained in-country; the 1989 Annual Report notes a high attrition rate of teaching staff in the last decade.

At the end of Class 6 children sit the Secondary School Entrance Examination. In 1989 a total of 3,664 children sat the examination (93% from government schools, the remainder from non-government schools), 81% of them for the first time. Statistics show that 1,090 were repeaters, and that there are proportionally more boys who fail the first time (63%), compared with girls. While the assessment at this level is currently entirely based on performance in the examination, the Ministry is looking into the feasibility of introducing an internal assessment component, to improve reliability and validity.

#### Secondary Education: (Forms 1 - 6 [7])

Of the total of 44 secondary schools in Tonga, only 7 are operated by the government. Enrolment in government schools in 1989 was 2,691 (19.4%); while in non-government schools it was 10,804 (80.6%), giving a total secondary student population of 13,877. A total of 767 secondary teachers included 176 government, and 591 non-government; the overall teacher:student ratio was 1:18.

At the end of Form 5, students sit the Tonga School Certificate Examination. In 1989, for the first time, this examination came under the complete control of the Ministry of Education (the New Zealand Ministry was previously involved). In 1989 a total of 1,616 candidates sat the examination, and of these 393 qualified for Form 6.

New Zealand ceased to offer in Tonga its University Entrance Examination (NZUE) in 1986. As an interim measure, Tonga used the New Zealand based Form 6 Examination,

and in 1989 it was replaced by the more permanent, regionally based Pacific Senior Secondary Certificate (PSSC). In 1989, 700 candidates entered for the award, and of these 92 (13.1%) qualified according to the University of the South Pacific's entrance requirements, while 112 (16.0%) qualified according to the Tonga Government's criteria.

### Tertiary Education:

In 1985 the government established the Community and Development Training Centre (CDTC) to coordinate and expand tertiary training opportunities throughout the Kingdom. The Centre assists established institutions and training programmes by providing a national framework for coordinated development. There are plans to significantly expand the role and programmes of the Centre during the next few years (DPVI; Ministry of Education, 1991).

Currently, the CDTC oversees the Tonga Teachers' Training College; the Tonga Maritime Polytechnic Institute, and the Queen Salote School of Nursing.

**Tonga Teachers' Training College:** The College was founded in 1944 for the training of primary school teachers; in 1984 a Diploma in Teaching was introduced, a three-year programme for both primary and secondary teachers. A total of 193 students were enrolled at the college in 1988, with the majority of entrants being school leavers from both government and non-government schools.

**Tonga Maritime Polytechnic Institute:** The Institute was opened in 1985, with funding from the German government. Its training courses currently include programmes for seafarers (ratings) and shore-based general engineering. The Institute is engaged in a major expansion programme with German aid (\$4.5 million) and has greatly expanded its shore-based programmes (motor mechanics; electrical; construction; plumbing) in response to a strong demand. The average annual intake in the basic rating course is 16. By mid-1990 a total of 476 students have gone through the Institute on various courses, of which about 200 had completed one of the five basic programmes.

### **'Atenisi Institute**

The 'Atenisi Institute is described as a University by 'I. Futu Helu (In Crocombe and Meleisea, 1988). From an experimental beginning in 1971, the University Division of the 'Atenisi Institute was separated off in 1978. Currently two-year AA and AS programmes are offered, and more than 115 Associates have graduated. The AA degrees are creditable towards a four-year BA programme, and to date more than 20 students have completed the degree. AA and AS degrees have been accepted towards New Zealand and Australian university programmes, and some holders of 'Atenisi BA degrees have progressed towards Masters studies in those countries.

### Future developments:

In 1991 the Ministry of Education was directed by Cabinet to propose a structure for the Higher Education programme in Tonga. A model has been proposed (Ministry of



Education, 1991) to re-organize the three existing tertiary institutes under the coordination of the Community Development and Training Centre. The Tonga Maritime Polytechnic Institute would become the **Institute of Science and Technology**, the Tonga Teachers' Training College would become the **Institute of Education Culture and Languages**, the present Form 7 programme and Accounting Certificate Course presently administered by the CDTC would become the **Institute of Higher Education**, and the Queen Salote School of Nursing and other health training programmes conducted by the Ministry of Health would become the **Institute of Health Studies**.

The proposed model would see the Institute of Science and Technology as a focus for the development of a programme in Marine Science (c.f. DPVI). This programme would attempt to coordinate and expand research activities already undertaken by Government Departments (including Fisheries). At present, the Ministry of Education is taking a lead by collaborating with UNESCO and James Cook University of North Queensland and the Consortium of Pacific Education (COPE) in conducting research in Marine Science.

## DISCUSSION

Education systems of the Pacific Islands countries have been derived from a variety of past colonial administrations and, until very recent times in most countries, have continued to rely on the established standards of metropolitan countries for curriculum and evaluation, with New Zealand and the United States being the predominant influencing countries. It was evident from this study, however, that there is an almost universal trend away from the influence of overseas curricula and evaluation, in favor of the development and adoption of national standards.

While many of the countries visited have access to tertiary institutions overseas (e.g. universities, technical institutions), there is a trend in favor of regional institutions such as the University of the South Pacific, or the University of Guam, since they are more geared to accommodating of the special needs of Pacific island students. There are existing or proposed plans to strengthen national tertiary institutions and, for a few countries, even to the level of degree-granting institutions (e.g. Western Samoa; Tonga; Cook Islands; Solomon Islands).

If Pacific Island countries are going to be able to meet the challenges that face their educational systems in the next century, and to improve the teaching of science, and hence raise the level of science literacy in their future populations, there are some very serious obstacles that confront them at the present time. Some of the most serious of these are discussed below.

### **Universal accessibility of education to the school-aged population.**

A summary of the population and numbers of school children attending primary and secondary schools in the countries visited, is shown in Table I. While universality of access to education is a goal for all of the countries visited, most have yet to achieve this. For the majority of countries, there is a high participation level at the elementary level (years 1 - 6,

or 1 - 8), ranging from 73% (Papua New Guinea) to 100%. Tonga has the longest history of compulsory education, and yet for several Pacific Island countries compulsory education is not legislated and, for some, it is an impossible goal even at the primary level because of shortages of schools, teachers, and geographical isolation.

For countries with compulsory education the trend is to increase the school leaving age to 16; in reality, however, for many Pacific Island children schooling may end as early as twelve years old (Papua New Guinea) and, in most countries, there is an alarming drop out rate once children reach their seventh year of education and beyond. It could be argued that this is a tragic waste of human resources yet, for some countries struggling against almost impossible odds, there are insufficient jobs even for those who make it through the various hurdles leading to the completion of school. Adding more 'qualified' school leavers to an already over stressed job market would simply increase the problem.

The demographics of Pacific Island populations suggest that for most of the countries universal accessibility to school will be an almost impossible goal; for the Marshall Islands, for example, with a population growth rate of 4.2%, and a mean population age of less than 15 years, space will have to be found in school for an additional 10,000 children by the end of this century. Since the government is quite unable to cope with present numbers, there seems little hope for the future. For others, with a net population loss like the Cook Islands, the situation is very different.

Geographical isolation and, in some instances linguistic diversity, are additional factors that prevent educational authorities from the provision of universal education even at the primary level a difficult goal (e.g. Papua New Guinea). An additional problem in almost all Pacific Island countries is the shortage of trained teachers, especially at the Secondary School level. Many countries have resolved this in part by the importation of ex-patriate teachers (such as Filipino teachers in Palau), although this is not a long-term solution and for some has been fraught with difficulties (e.g. CNMI).

### **Raising the overall level of science literacy of the population.**

Science is taught in all Pacific Island school systems, but the survey showed that there is an enormous disparity in quality and programmes among countries and that, for almost all of them, there are serious problems in terms of curriculum, method of presentation, teacher training, and resources. These constraints result in a low level of science literacy for the population at large. Of the very few privileged students who overcome all of the hurdles in the educational system and graduate from school to enter tertiary institutions (in some countries less than 1% of the initial primary intake cohort), few select science as a subject and those who do find themselves academically and socially ill-prepared, resulting in a high failure rate at University.

Science is generally introduced at the elementary level, but in most systems there is a lack of coordination from elementary to secondary level and, unfortunately, the stress is on content and rote memory work, and is geared towards written examinations. Only in a few instances (e.g. Fiji) is there a trend towards allowing marks gained during in-class evaluation to be counted towards the final grade (up to 50% for some subjects). The overemphasis on examinations and the various hurdles they create to progression through the

school system is a prevalent problem in the South Pacific; for many administrations it is an essential tool for weeding students out so that the lucky few can take advantage of the small number of

secondary schools and the very limited number of scholarships available for them to proceed to tertiary institutions either at home or overseas.

Very few countries introduce marine-related topics in the curriculum, even though the majority of children in the smaller island nations are surrounded by the ocean and it is an integral part of their daily lives. The importance of using relevant curriculum is being stressed by most countries, but their curriculum development staff are hindered by a lack of funding and resources, and a lack of appropriately skilled teachers and curriculum experts who can contribute towards curriculum development. A successful and stimulating method of teaching science is the "hands on" approach. Pacific Island countries are situated in some of the most exciting and spectacular natural surroundings, and this huge open air laboratory offers unlimited opportunities for the teaching of science. Science teaching can be made interesting and exciting, and perhaps there is no natural environment more amenable to the development of a challenging programme than the oceans. This approach can be achieved at low cost, providing suitable training programmes and resources are developed. The model being adopted by CNMI, and the plans being undertaken by Tonga, described earlier here, are approaches that should be seriously considered by other Pacific Island countries.

At the elementary level, there may be no more than a handful of teachers with any science training at all, and at the secondary level, a very small number who have science degrees (apart from CNMI, Guam and American Samoa). Pacific Island teachers who have acquired science degrees have often opted to move to other countries where salaries and working conditions are better than at home, resulting in a net loss of qualified teachers to the region. In some countries (e.g. Fiji) salary differentials for teachers have been created, in order to try to retain qualified staff or attract those who have gone overseas back; for most Pacific Island countries, however, the economic and social conditions make it very difficult to introduce such programmes.

Facilities (such as laboratories, scientific equipment, etc.) are almost universally inadequate or lacking except in a very few privileged secondary schools.

Preliminary, foundation, form 7, and other pre-university programmes will continue to be important for many years to come, as a means of preparing students for tertiary education. While universities have various programmes to assist in this preparation, the onus is falling more and more on national tertiary institutions and school systems. Some countries have excellent tertiary capabilities in the form of two-year colleges (such as the Community College of Micronesia system; the Solomon Islands College of Higher Education) which, in many instances can offer two-year AA or AS degrees that lead into university-level programmes. The introduction of Form 7 or comparable programmes is in progress in a number of countries, in part driven by the decision of the University of the South Pacific to eliminate the teaching of Foundation programmes on campus in 1992. For the smaller nations, however, these preparatory programmes will only be available overseas.

## **Vocational training and programmes for school drop-outs**

The need to improve vocational skills is recognized as a priority throughout the South Pacific region (FFA, 1991). In developed countries many vocational skills are acquired as part of growing-up in an environment filled with electronic and mechanical gadgets; for the huge majority of Pacific Islands, these opportunities are not available as part of everyday life in the village, and so electrical, mechanical related skills cannot be acquired by direct every day experience. As a result, the majority grow up without them and, when in the work force, require training before they can engage in work involving these skills.

For some Pacific Island countries the inclusion of vocational skill training (e.g. gardening, handicrafts, wood-work, metal-work) has been an integral part of the school curriculum for a long time. For others, these skills are not included, or taught at a very low level. In the best systems (e.g. Fiji) special vocational secondary schools concentrate on those students less academically able, training them in vocational and life-skills. The accreditation of these programmes by the Fiji National Training Council means that these students leave school with a technical qualification that gives them a recognized entry into the job market.

Technical (vocational) training is largely carried out in-country, or with assistance from aid-donors, regional, or international agencies. Much of the training is of the remedial or up-grading kind, or highly specialized; many of those participating have not had the advantage of exposure to technical education at school, which means that they lack grounding in such skills and therefore have that much more difficulty in dealing with more advanced training. The need for the continued development of vocational and technical programmes at all levels will continue for the indefinite future, and the onus will likely continue to be placed on national school and technical institutions to provide the training.

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**Table I** : Population and school attendance statistics, 1988-1991, for Pacific Islands.  
+ = no data available.

		School Attendance		
Country	National Population	Primary (1-8)	Secondary (9-12)	Total
<u>Micronesia</u>				
Kiribati	63,883	13,000	+	+
Marshall Is	45,000	12,100	2,100	14,200
FSM	98,000	24,600	7,400	32,000
Palau	15,000	2,258	1,045	3,303
CNMI	48,000	5,187	1,471	6,658
Guam	150,000	21,753	8,142	29,895
Sub Totals	419,833	78,898	20,158	86,056
=====				
<u>Melanesia</u>				
PNG	3,500,000	477,748	178,000	655,748
Solomon Is.	285,796	41,832	+	+
Vanuatu	144,990	+	+	+
Fiji	715,375	134,340	52,536	186,876
Sub Totals	4,646,161	653,920	230,536	842,626
=====				
<u>Polynesia</u>				
Tuvalu	9,000	+	70	+
Cook Is.	17,754	3,200	2,500	5,700
W. Samoa	162,000	37,833	11,268	49,101
Amer. Samoa	37,000	8,595	3,447	12,042
Tonga	94,535	16,310	13,877	30,187
Sub Totals	320,289	65,938	31,162	97,030
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TOTALS	5,385,283	798,756	281,856	1,025,712
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