

Country report : science education in Brunei Darussalam

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COUNTRY REPORT : SCIENCE EDUCATION IN BRUNEI DARUSSALAM

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BY:

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INTRODUCTION

Brunei Darussalam has a total population of 296,000, estimated figures for 1995 (19966, Brunei EPU). Out of this, 52.9% is male and 47.1% female. The youth population under the age of 20 is estimated to be 42.2%. The land area of Brunei Darussalam is just 5,765 sq.km.

The government provides universal access to primary education free of charge for every child of Brunei Darussalam citizen. Under the auspices of the Ministry of Education, the provision of free general education from primary to secondary is given for a continued period of at least twelve years. However it is not compulsory for any pupils to complete the twelve year education. This policy perhaps contributes to the high literacy rate of the country at ninety per cent.

Education provision given to the people through the administration of the Education Ministry is viewed as one of the main means for human resource development of the nation. Thus, generally the government and the public at large, greatly value education as a vehicle for nation building and social mobility.

GENERAL EDUCATION IN THE SCHOOL SYSTEM.

In Brunei Darussalam one system of general education operates. It was popularly known as the bilingual system at the early stage of its implementation which began in 1985. Essentially, it means two languages predominantly used as media of instruction in school which are Malay Language for a certain number of subjects whilst English for the others. Since then, it has experienced quite rapid changes or improvement. This improvement may be seen in the fact that several courses of studies are introduced for students of differing ability and intellectual interests.

Quantitative development is also felt for instance in the increase of schools from 194 in 1991 to 209 in 1994. There is also improved facilities in all the schools. Meanwhile, the student-teacher ratio was put at 12.9:1 for the primary level and 13.1: for the secondary level during the period between 1991 - 1995.

General Education system can be divided into three main stages which are the primary stage (age : 6 to 11), secondary stage (age: 12 to 16) and pre-university stage (17 to 18). One year is spent in the preschool stage when a child is at the age of 5. At this stage education is less formal and emphasis is for early school socialization and familiarization to certain basics for numeracy, reading and writing. The system is illustrated in the chart on page 8.

SCIENCE IN THE SCHOOL CURRICULUM

Science education is provided mainly through the teaching of one or more than one science subjects throughout the schooling levels. This is clearly reflected in the school curriculum where science is offered as one of the compulsory or core subjects, commencing at upper primary level right up to upper secondary level.

The Primary Education

The primary education is further sub-divided into the lower primary level and the upper primary level. The primary student population for both levels as for 1994 was put at a total of 42,156 of which 52% boys and 48% girls. At this stage the curriculum is common for every pupil. There is a main difference between the lower primary level and the upper primary level apart from the subjects offered, the medium of instruction for lower primary is Malay Language for all the subjects except for English which is taught as a subject whereas at the upper primary level Malay Language is used as the medium of instruction for a number of subjects and English for the rest.

At lower primary level, science is not offered as a one distinct subject. However some elements of science education are taught through the subject known as General Studies. In this subject, through teacher-set step by step activities or demonstration, pupils learn about objects and living things they encounter daily. Observable features such as size, colour and texture form the basis the development of their classification skills and basic science knowledge. Rarely are students being asked to conduct more complex investigative activity than described above.

Science education may be considered to begin at the upper primary level when the pupils are between the age of 9 and 11. At this stage science is then taught as a subject which comprises the usual science concepts and principles ranging from classification of living things to the study of properties of light and energy etc. Though most practical activities involve students doing experiments or practical work by following instruction given by the teacher as a guide towards certain discovery, some simple surveys of pond life in the school compound and certain habits or behaviours which lend themselves more to socially related topics are included in the curriculum. Social issues of local concern such as drug abuse, tobacco smoking, and others are incorporated into the relevant topics. The science concepts or principles learned in the classroom are encouraged to be linked to what can be observed outside, for instance the application of pulley system in construction sites. The following are subjects offered in the lower and upper primary school curriculum:-

The Subjects studies at Lower Primary

Malay Language)	
Mathematics)	Instruction is in Malay
General Studies)	
Civics	>	Malay Language as medium of instruction.
Islamic Religious Knowledge)	
Physical Education)	
English Language)	

Subjects studied at Upper Primary

Malay Language)	
Islamic Religious Knowledge)	
Civics	>	Instruction in Malay Language.
Physical Education)	
Art & Craft)	
History)	
English Language)	
Mathematics	>	English Language as medium of instruction.
Science)	
Geography)	

The Secondary Education

Similar to the situation at the primary stage, the secondary education is also further subdivided into the lower secondary and the upper secondary. The lower secondary stage of education is for the age of 12 to 14 whilst at the upper secondary, the pupils' age would be from 15 to 16. The secondary student population stated as in the year 1994 was 27,086, of which 48% male and 52% female.

At the lower secondary stage, no science specialization has yet occurred. The science education given in this lower secondary curriculum is in the form of a science subject which is general in nature. Since a common curriculum is offered to every pupil, science is understandably taken by both boys and girls.

Specialization begins as far as science education is concerned at upper secondary level where students are streamed into 'science stream' or 'art and technical stream' according to their achievement in the public examination which they sit for at the end of their lower secondary course. The science stream students usually offer at least two pure science subjects and most of them take

Physics, Chemistry and Biology as three separate disciplines of science. On the other hand the art students usually take one general science subject though some do take up a pure science subject. Due to the fact that science together with Mathematics are made as two of the compulsory or core subjects in the school curriculum from the primary level right to the upper secondary level, pupils have no option of taking science only and leaving Mathematics out.

However at the higher secondary level known as the pre-university level, pupils have greater choice. They are allowed to take any appropriate or suitable combination of three subjects based on their previous performance in the public examination at the end of their upper secondary schooling.

Subject in the Lower Secondary Curriculum (Common)

Malay Language)	
Islamic Religious Knowledge)	
M.I.B.	>	Instruction in Malay.
Physical Education)	
* Art & Craft)	
Mathematics)	
English Language)	
Science)	
Geography	>	Instruction in English.
History)	
* Woodwork/ * metal works)	
* Home Science/ * Commercial Studies/))	
* Agriculture/ * Computer Studies)	

* one option from these subjects.

Subjects in the Upper Secondary Curriculum.

Core or Compulsory Subjects;

Malay Language
English Language
Mathematics
Science

Other subjects are selected according to the streaming. These elective or optional subjects include vocational or technical subjects.

SCHOOL AND COMMUNITY

As the society grew in affluence so as its expectation for the children's education. Similarly in Brunei Darussalam too, of course parents are generally keen to have their children get access to better education and further study. The enthusiasm is not particularly in science only but generally in any field of study that would render their children better chances for further study and eventually better employment.

Since the government provides more opportunity for further study in the field of science and technology and certain social science field to meet the expert manpower needs in these fields, this in itself motivates the parents and create their interest in science education. Furthermore qualification in science and mathematics is seen as preferred subjects as prerequisite for vocational/technical training. However selection for science specialization in the science stream is based on relatively high academic achievement which unfortunately could only be attained by 20 - 30% of the pupils who are considered being privileged to be channelled into this stream. Others would then study science for their general knowledge. Parents assist their children's study not only in science but also in other subjects, generally by engaging them in private tuition. Other significant forms of assistance in science education given by parents are not widely known.

Although there is no Parent-Teacher Association in Brunei Darussalam, some schools in an attempt to form linkage with community, have set up their own Parent-School Committee involving school administrators, teachers and a few representatives of the community. Unfortunately, such committee is set mainly for social functions and as a mean of communicating matters pertaining to students' academic progress and discipline. The community does not play any role in the policy, administration or formulation of curriculum of the school.

To some extent, links between science education and the local industry, ways of living etc. are recognized as important at least to enhance its greater understanding and hence stipulated in the curriculum for instance under the topics pollution from industry, application of science principles in the waterworks and social issues such as obesity among teenagers, drug abuse etc. Suggested activities with regard to visits to such places are also given. It is therefore imperative that links between school and these organizations should be established.

As to cultural relevance, some social and environmental issues, particularly that are of primary concern or interest to the people or country are incorporated into our science curriculum. Matters which are viewed to contradict the local customs and cultures are prudently adjusted so that they would be more relevant. The question whether the science curriculum has a gender-biased towards boys or girls, has not been established by any research. There should not be any gender bias or preferences in the choice of science studied as a subject, since it is taught to all students at upper primary right up to upper secondary level. However, as for

vocational or technical-oriented science like *agricultural science, home science, geometrical & mechanical drawing, food & nutrition, fashion & fabrics, woodwork and metal work*, where they are offered as optional subjects, there seems to be gender preferences. For instance, woodwork and metal work attract more boys while food & nutrition, home science and fashion & fabrics are much preferred by girls. At pre-university level (A-level), students normally have the choice with regard to the type of subjects they want to study. Recent data collected from all the four schools offering the course as given in the appendices 1 and 2 shows that physics is the subject that attracts more boys while biology attracts more girls. However reasons behind this fact are not obtained.

The prevailing mutual concern of both the government and the educated parents as far as science education is concerned is not specifically or directly about its nature rather it is more to do with how best to enhance students' academic achievement in this field which eventually would lead to the increase number of students pursuing science or technology related tertiary courses or technical training.

Popularisation Of Science

The importance of science and technology is always emphasized through various activities by the government and the private sector. Recently, the Ministry for Development with the cooperation of the Ministry of Education has put up a six month long science exhibition opened to public. One of the aims of this exhibition is to inculcate interest and appreciation for science and technology among the populace. Another effort to popularize and promote science and technology is through Brunei Shell Petroleum sponsored non-formal science education programmes, organized annually by the Brunei Association for Science Education (BASE), a non-governmental body.

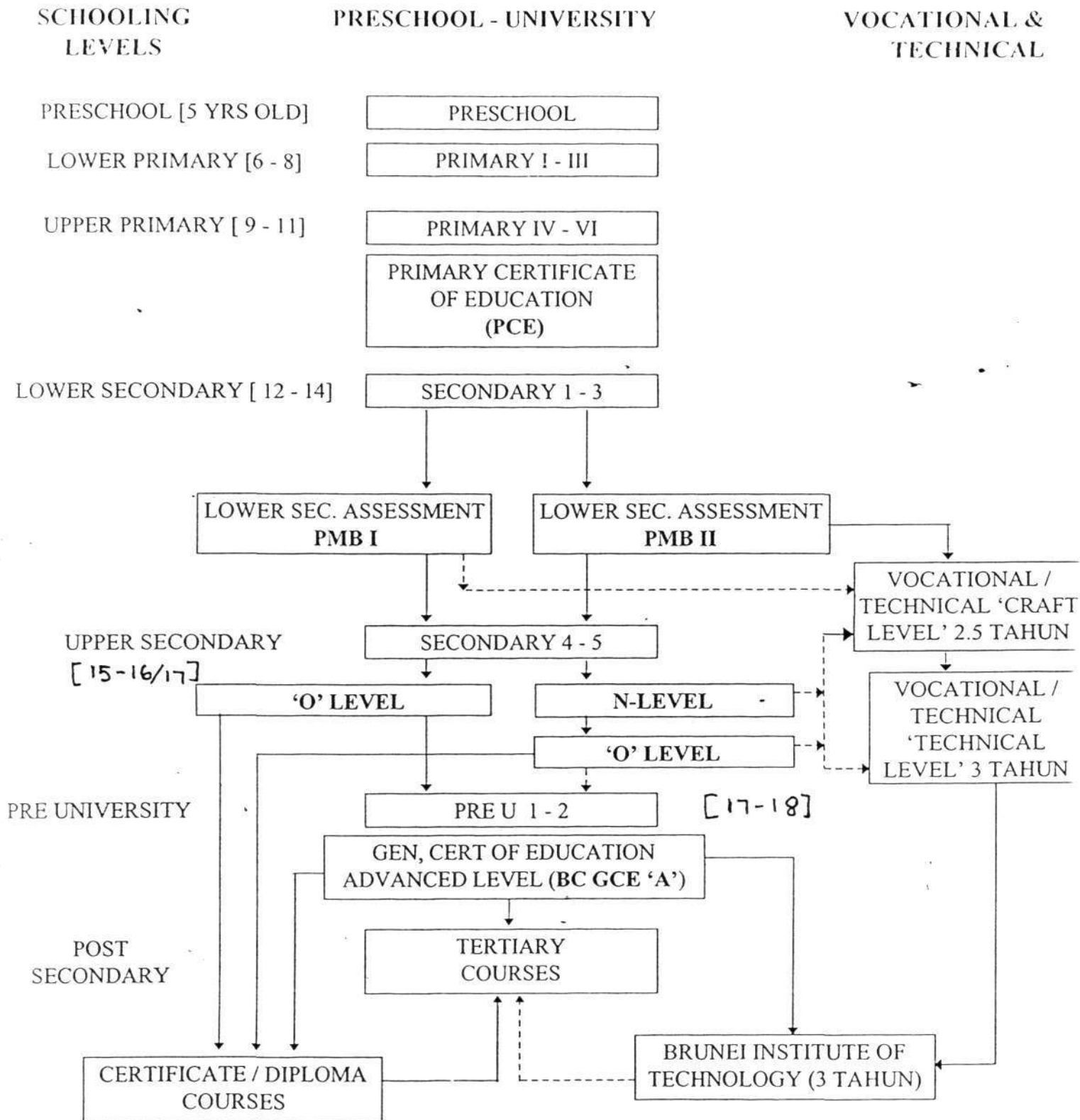
CONCLUSION.

The school curriculum is a subject-based curriculum. This is perhaps still considered adequate to meet the needs of the country in its pursuit for the increase in number of students progressing to the tertiary level especially in the badly needed science and technology related courses and as well as further training in technical skills. This perhaps explained why concern over other aspects of the nature of science education exerts lesser prominence. However this does not mean the government is unconscious as to the needs of raising the science knowledge or scientific literacy level of the general public. For it views a high level of science and technology awareness and literacy would be desirable in ensuring high-technologically driven economic development which is anticipated for the near future.

References:

- Brunei Darussalam Seventh National Development Plan 1996 - 2000 - The Economic Planning Unit in the Prime Minister's Department.
- Brunei Darussalam Statistical Yearbook 1994 - The Economic Planning Unit in the Prime Minister's Department.
- The Upper Primary Science Syllabus 1990 - Curriculum Department, Ministry of Education.
- The Lower Secondary Science Syllabus Draft 1997 - Curriculum Department, Ministry of Education.
- Maklumat Dasar-Dasar Pelajaran 1988 - Curriculum Department, Ministry of Education.
- Education in Brunei Darussalam 1992 - Ministry of Education.
- Science Students Enrolment in sixth Form Classes. - Department of Schools, Ministry of Education.

EDUCATION SYSTEM BRUNEI DARUSSALAM



**STUDENTS STUDYING SCIENCE SUBJECTS AT G.C.E. 'A' LEVEL COURSE
IN BRUNEI DARUSSALAM - 1996-1997**

SCHOOL	YEAR (cohort)	* TOTAL NO. OF STUDENTS	CHEMISTRY		BIOLOGY		PHYSICS	
			MALES	FEMALES	MALES	FEMALE	MALES	FEMALES
MAKTAB	1997	196	43	102	40	74	54	60
DPMAMB	1996	245	71	97	28	72	84	57
MAKTAB	1997	73	27	39	3	17	22	23
SAINS	1996	63	33	24	3	13	30	11
MSOAS	1997	23	23	0	0	0	23	0
	1996	-	-	-	-	-	-	-
SMSyAll	1997	116	21	22	18	15	27	13
	1996	-	-	-	-	-	-	-
OVERALL	1996/97	716	218 (30.44 %)	284 (39.66 %)	92 (12.85 %)	191 (26.68 %)	240 (33.52 %)	164 (22.91 %)

* These students study at least one science subject (Chemistry/Biology/Physics)

PSH: 24/5/97

Students Studying Science Subjects at GCE "A" Level Course in Brunei Darussalam - 1996/97

