DOCUMENT RESUME

ED 473 030 SO 034 404

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TITLE Singapore Education Sector Analysis: Improvement and Challenges in Academic Performance of Four Ethnic Groups in Singapore.

PUB DATE 2002-00-00

NOTE 45p.; Paper presented at the Annual Meeting of the Comparative and International Education Society (Orlando, FL, March 5-9, 2002).

PUB TYPE Reports - Research (143) -- Speeches/Meeting Papers (150)

EDRS PRICE EDRS Price MF01/PC02 Plus Postage.

DESCRIPTORS *Academic Achievement; Admission Criteria; *Comparative Education; *Educational Practices; Educational Research; Elementary Secondary Education; *Ethnic Groups; Foreign Countries; Outcomes of Education; Postsecondary Education; Socioeconomic Status

IDENTIFIERS Sector Analysis; *Singapore

ABSTRACT

Singapore is a multi-ethnic nation-state with the following ethnic groups: Chinese (76.8%), Malay (13.9%), Indian (7.9%), and Others (1.4%) such as Eurasians, Europeans, Arabs, Jews, and Japanese. A bilingual policy, which takes English as a lingua franca and Mandarin, Malay, and Tamil as mother tongue for each ethnic group, reflects this country's multi-ethnic characteristics. The government views education as the sole intervention and the vehicle for Singaporeans to survive and to improve their social status. However, under an educational system based on meritocracy, there has been a gap among ethnic groups in academic achievement and socioeconomic status. This paper explores the following issues in Singaporean education: (1) a system of selection of students who can attain higher education in the current system; (2) status of attainment of higher education and academic performance by ethnic groups; and (3) challenges Malay and Indian students face in their academic performance. To identify these challenges, available research on factors that affect academic attainment and performance was reviewed. The paper describes the Singapore educational system; the current educational system, by focusing on the process of student selection; the outcome of education, indicating that educational credentials relate to the prospective socioeconomic status students may achieve in Singapore; and the status of attainment to higher education and academic performance by ethnic groups. Contains 33 references. Comprehensive data tables and graphs are appended. (BT)

Singapore Education Sector Analysis: Improvement and Challenges in Academic Performance of Four Ethnic Groups in Singapore

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Paper presented at the
Annual Meeting of the
Comparative and International Education Society,
March 5-9, 2002
Orlando, Florida

TABLE OF CONTENT

I. INTRODUCTION: COUNTRY OVERVIEW AND SCOPE OF THIS SECTOR ANALYSIS

Since its independence in 1965, Singapore has experienced remarkable economic development. The Gross National Product (GNP) per capita in 1999 was $30,550, which ranks Singapore's economy as the fifth largest in the world. The annual growth rate from 1970 to 1995 was 6.3%, which is the highest not only among the five leading countries, Switzerland (1.3%), Japan (3.6%), Norway (3.0%), Denmark (1.8%), and Singapore (6.3%), but also among the top thirty countries having high GNPs (World Bank, 2001).

Singapore is a city-state with scarce natural resources. It is often mentioned that the economic development of this country has been realized by taking the relative advantage of its assets in the international economy such as providing cheap labor during the 1960s-70s and upgrading the labor force since 1980s. Indeed, human resources have been viewed as crucial for Singapore's survival and development. The government has implemented educational policies that have reflected changing demands from the international economy for the past thirty years. The effects of the demands from the international economy on educational policy have been reflected in the introduction of bilingual education and the early streaming policy, which started in 1979. The revision of the streaming policy in 1991 attempted to up grade the medium educational level of the Singaporean workforce by providing primary and secondary education to a larger population than before. The emphasis on information technology education has been observed since the latter part of the 1990s. In the Third International Mathematics and Science Study in 1999, Secondary Two Singapore students ranked the top in mathematics and the second in science (Ministry of Education, 2000).

The employment of two unique educational and social policies, bilingual policy and ability-based educational provision, seems to be influenced by the following geopolitical features of Singapore. Singapore is a multiethnic country with Chinese (76.8%), Malay (13.9%), Indian (7.9%) and Others (1.4%) such as Eurasians, Europeans, Arabs, Jews, and Japanese (Department of

Statistics, 2001) (See Appendix 1). In addition, Singapore is surrounded by two Muslim countries, Malaysia and Indonesia. The bilingual policy, which takes English as a lingua franca and Mandarin, Malay, and Tamil as mother tongue for each ethnic group, reflects this country's multi-ethnic characteristics. The government has been operating its educational system on the basis of a "meritocracy." The government views meritocracy as follows.

> 'Meritocracy,' -that (people) can get ahead in life if (they) work hard, and regardless of (their) background. It means providing all our children a sound education and our workers training and retraining, so that they have the means to seize the economic opportunities offered to them.(Goh, 2000).
> The best way to avoid being trapped in the lower-income group is through education...I believe that it (education) will be the single most important factor determining the success of Singaporeans competing in the New Economy.(Goh, 2000)

As mentioned in the speech by the Prime Minister, the government views education as the sole intervention and the vehicle for Singaporeans to survive and to improve their social status. However, under the educational system based on meritocracy, there has been a gap among ethnic groups in academic achievement and socioeconomic status. Gaps in educational attainment and income among ethnic groups, especially the low academic achievement of Malay students and low income of Malay households have been publicly recognized since the 1980s (Tan, 1995). The income gap among ethnic groups in 1990 and 2000 is as follows: The category called "Others" is the highest monthly income earner ($2782 in 1990, $4775 in 2000 of its median household income), followed by Chinese ($2400 in 1990, $3848 in 2000), Indian ($2174 in 1990, $3387 in 2000), and Malay ($1880 in 1990, $2798 in 2000) (Department of Statistics, 2001, No.7. p.3). The annual increase in median household income of Chinese is 4.8%, Indian is 4.5% and Malay is 3.7%. Indian and Malay's income is lagging behind other ethnic groups (See Appendix 2).

The government does not perceive closing the gap among ethnic groups as the priority of social policy. The government views that each ethnic group's self-effort is the sole way to close the gap from the national average. Although the government does not act conspicuously by providing the intervention programs for closing the gap among ethnic groups, politicians have voiced their

concern about the situation on various occasions. For example, the Prime Minister asked Malays to improve their academic performance to equal the national average so they can play significant roles in the new economy (Goh, 2001). Mendaki and SINDA, Malay and Indian self-help groups respectively, target 2009 and 2010 as goals when their academic performance would be on a par with the national average (SINDA, 2001; Mendaki, 2001).

Under these circumstances, it may be useful to identify the challenges Malays and Indian students are facing in the Singapore education system. As this sector analysis illustrates, academic credentials relate to the socioeconomic status of individuals in Singapore. My exploration in this paper focuses on the following issues: a) system of selection of students who can attain higher education in the current system, b) status of attainment of higher education and academic performance by ethnic groups, c) challenges Malay and Indian students face in their academic performance.

In order to identify challenges Malay and Indian students are facing, I reviewed the available research on factors that affect academic attainment and performance. However, data I could acquire on this topic are limited. Since the Singapore government does not view open enrollment or provision of the same academic content to every child as policy options, my sector analysis focuses on identifying the challenges the lagging groups face adjusting to the current educational system.

The structure of this paper is as follows. First, I will provide a description of Singapore educational system. In this section, I will describe Singapore educational system in relation to the economic context. Then, I will describe the current educational system by focusing on the process of student selection. I also describe the outcome of education, which indicates that educational credential relate to the prospective socioeconomic status students may achieve in Singapore. Second, I will survey the status of attainment to higher education and academic performance by ethnic groups. Third, I will explore the challenges Indian and Malay students are facing.

II. DESCRIPTION OF SINGAPORE EDUCATION SYSTEM

A. Introduction

In this section the Singapore educational system will be described from the following perspectives: a) Singapore's economic condition, b) Current education policy, c) Current education system, and d) Outcome of education. By way of this exploration, I hope to illustrate the relationship between economic context and educational policy in Singapore.

B. Economic Condition

This section surveys historical development of economy, change of workforce population and change of income.

1. Growth of GDP: Historical Development

Singapore is one of the most developed countries. The annual economic growth rate from 1970 to 1995 was 6.3%, which ranks the top in the world (World Bank, 2001). At the same time Singapore's economy is vulnerable to external economic influence. The economic decline in the U.S, among developed countries, and neighboring countries caused the recession in 1985 and 1997. It is anticipated that this year's economic decline will be the worst since the independence in 1965, which derives from the decline of U.S. economy and slowdown of international economic transactions (Strait Times Oct.10, 2001).

Economic development in Singapore is realized by tuning its economy to the world economy. In Prime Minister National Day Speech he portrayed past and future economic development in Singapore as:

> The climb up Mount Everest provides a vivid image for Singapore's own climb up the mountain of economic development. Senior Minister (from 1965 to 1990) brought Singapore up to Camp 2 – from labour intensive to electronics and higher value-added industries. In the last 10 years (from 1990 to 2001), we have climbed higher to Camp 3, with wafer fabs, chemicals, and financial services. Now, we are making our way to Camp 4, to do IT, life sciences, and other knowledge-based activities. If we make it to Camp 4, we can then try to scale the summit where countries like the US, Japan and Switzerland are. (PM Goh Chok Tong National Day Rally Speech, Aug. 19, 2001)

The above mentioned macro-level economic development is reflected in the changing patterns of industrial products and employment, which will be discussed below.

2. Structural Change of Industry and Employment

Manufacture and service sectors produced 99.9% of GDP in 2000. Approximately two-thirds of the work force is in the service sector in 2000. Changes in workforce population from 1990 to 2000 indicate that occupational structure has been upgraded. For example, the proportion of the workforce in administrative & managerial positions increased from 9.4 % in 1990 to 14.3 % in 2000. The technical related workforce increased from 5.3% in 1990 to 10.1% in 2000. In contrast, the production related workforce decreased from 27.7% in 1990 to 19.3 % in 2000, and cleaners and laborers, which represented 10.9% of the workforce in 1990 declined to 6.8% in 2000 (Department of Statistics, No.4). Manual labor, such as cleaners or production workers, has been distributed primarily to among foreign workers and less to Singapore residents. The government anticipates that Singapore's workforce will be drawn to knowledge-based industries, and it views competitiveness and innovation as keys for economic development of Singapore (Ministry of Finance 2001).

3. Change of Income Distribution

I could not find data concerning the relationship between occupation and income. Consequently, it is difficult to examine how changes in occupational structure have affected the distribution of income. By referring to available data, this section illustrates general trends in distribution of income.

Singaporeans' income has increased for the past twenty years. There are distinctive shifts in pattern in income distribution in the period from1980 to 1990 and the period from1990 to 2000. From 1980 to 1990, the majority of Singaporeans' income increased to the same degree. For example, in 1980, 88.2% of workers earned income below $500 (63.3%) and $500-$999. In 1990, only 4.1% of Singaporeans earned below $500. Worker's income is between $500 and $1499

(63.7%). Changes from 1990 to 2000 reflect the different pattern. In 2000, income was spread over various levels. More than 20% of people's income was over $4000; however, more than 10 % of people's income is less than $1000. Gini coefficient ratio also indicates the widening disparity of household income (Department of Statistics, 2000 No.7) (See Appendix 3).

C. Current Educational Policy

In this section Singapore's educational policy will be surveyed. It is inferred from the examination of documents on aims and objectives in education and rationales of educational policies that the government has viewed education as an instrument for national survival and economic development.

In the late 1990s the government implemented two policies. One was the introduction of the National Education in 1997, the second was the reorganization of the curriculum based on the "Thinking Schools, Learning Nation" concept. The current mission of the Singapore educational service is "to mould the future of the nation by moulding the people who will determine the nation's future" (Ministry of Education, 2000). The government's vision of the nation's future and its view of education is stated as follows:

> Against the backdrop of Singapore's response to a future dominated by the twin forces of globalization and technological change, the Ministry of Education's 1998 publication, Learning to Think, Thinking to Learn: Towards Thinking Schools, Learning Nation, set out the mission of Singapore's education service--to mould the future of the nation, by moulding the people who will determine the nation's future. (Ministry of Education, 2000, p.6)

Ability-based education is also located in the rationale of national survival:

> Ability driven education also encompasses a social dimension. It fosters in students a sense of self-worth and self-esteem in contributing to the larger community. It instills national values so that they will be committed to Singapore and energized to contribute to the community and society. Our students must feel a sense of Singapore's heritage, and of ownership in the destiny of the nation." (Ministry of Education, 2000, p.10)

In summary, the current education policy is based on Singapore's long held view of education: education for national survival and economic advancement. The government expects

education to produce a workforce that can cope with a knowledge-based economy. The ability-based education approach continues to produce a competitive workforce.

D. Expenditure on Education

Public Expenditure on Education represents about 3% of GNP. Next to defense (27.8%), education is the second most budgeted section (22.4%) (Ministry of Finance, 2001). The government allocates a relatively equal amount of the budget to three sectors of education: primary, secondary, and tertiary. However, an increase in the allocation is observed in tertiary education when data in 1990 and 1996 are compared. In 1990 29.5% of the budget was allocated to tertiary education and in 1996, 34.8% was allocated to it (UNESCO, 2000).

E. Current Educational System

Previous sections suggested that Singapore's current educational policies reflect the government's vision of economic development. The rationale for ability-based education is to produce a creative workforce that can cope with a knowledge-based economy. This section provides a description of the student population, and a description of the different types of courses and procedures of streaming.

1. Student Population

The school age population of Singapore has increased from 1990 to 2000. However, it is anticipated that enrollment in primary school will decrease in the future because of the decline in the population of children aged 0-4 from 1990 to 2000 (Department of Statistics, 2000).

Singapore does not have compulsory education. The government is planning to introduce six years of primary education in 2003. The gross enrollment ratio to secondary school has increased from 68 % in 1990 to 74% in 1996 (UNESCO, 2000). The drop out rate from primary school was 2.6 % in 1988 and 0.4% in 1998 (Ministry of Education, Compulsory Education Report, 2000). The drop out rate from secondary school is not known.

Of the primary one cohort group 86.5% after ten years are attending one of the post-secondary institutions: pre-University, Polytechnics and Institute for Technical Education. Enrolment ratio to post-secondary institution has increased. For example, it was 61.7% in 1991 (Ministry of Education, 2001).

Large portion of students are oriented to science and technology in universities. In 1996, 58% of students enrolled in natural sciences, engineering and agriculture. This portion is higher than other NIES, such as the Republic of Korea (38%), Hong Kong (42%), and other developed countries, such as Switzerland (31%), Denmark (21%), USA (19%), and Japan (23%) (UNESCO, 2000).

2. Types of Schools and Courses and Process of Streaming

There are four types of schools in Singapore that provide the national curriculum: government schools, government aided schools, autonomous schools, and independent schools. Except for six Madurasas and San Yu Adventist School where about 4300 students are enrolled, all schools follow the national curriculum. Since Singaporeans are not allowed to enroll in international schools (The Strait Times, July 24, 2001), almost all Singaporeans enroll in one of the above mentioned schools.

According to the streaming policy, students are placed in courses according to their academic abilities. Below, I will describe the differences among courses and the procedure of streaming. I referred Lim & Tan's work, "Educational Assessment in Singapore" (1999) to organize this section.

a. Primary Education

Primary education spans six years. It is consists of four years of a foundation stage and two years of an orientation stage. English, mother tongue and mathematics are emphasized at the foundation stage. At the end of Primary Four, students will be streamed into one of three language courses, namely EM1, EM2, and EM3, according to their abilities in English, mother tongue and mathematics. Teachers and a principal at each school assess students' abilities. The end of year

examination comprise about 70 % of the assessment and continuous assessment, such as short class tests, quizzes, project work, homework, practicals, portfolios, observations and oral presentations, comprise about 30 % of overall assessment. In order to increase interschool accuracy of assessment, schools follow a stipulated format (table of specifications) to select items from an item bank provided by the Ministry of Education (MOE) for the end of year examination. EM1 offers both English and mother tongue with the first language level, while EM2 offers English as the first language level and mother tongue as the second language level. About 15% of the least academically inclined students are streamed into EM3, in which students are expected to learn English and basic mother tongue.

Academic contents vary according to courses, hence subjects assigned at Primary School Leaving Exam (PSLE) differ among courses. Pupils in EM1 and EM2 take English, mother tongue, mathematics and science exams at their PSLE. EM1 pupils may take higher Malay/Chinese/Tamil as their mother tongue. Pupils in the EM3 stream take foundation English, basic mother tongue and foundation mathematics at their PSLE.

Based on PSLE results, students will be streamed into either Special course (top 10%), Express course (next 50%), Normal Academic (next 20%), and Normal Technical (next 15%). Approximately the bottom 5% of the least academically inclined pupils repeat Primary Six if they are not over age, which is below 14 years old. If students are over age, they may enroll in courses offered by Institute of Technical Education (Lim & Tan, 1999).

b. Secondary Education

Secondary school has three streams: Special, Express, and Normal. Pupils in Special and Express courses (top 60%) finish secondary school in four years and take the Cambridge General Certificate of Education Ordinal Level (GCE O level) Examination. Pupils in the Normal stream (next 35%) sit for GCE Normal Level (N-level) Examination at the end of the fourth year in Normal

course. Based on the results of the N-level examination, students who are competent can go on to the fifth year and can sit for the O-level examination at the end of the fifth year.

The O-level examination is used as a certification as well as a measurement for admission to the junior college, centralized institute, and polytechnics. Students at Special and Express courses must take between six to nine subjects for GCE O-level, while students in the Secondary Five Normal courses must take between four to seven subjects. English language, mother tongue/higher mother tongue, and mathematics are compulsory subjects for everyone.

The grades awarded for the subjects are A1, A2, B3, B4, C5, C6, D7, E8, and F9. A1, A2, B3, B4, C5, and C6 are O-level pass grades. D7 and E8 are below O-level pass grades, and F9 is not graded and not recorded in the certificates.

In order to be eligible to apply for junior college, student must score 20 points or less in the L1R5 aggregated score. This means the total score of English language (L1) and five relevant subjects (R5) should not exceed 20 points.

The admission requirement for centralized institution is a L1R4 aggregated of 20 points or less. L1R4 is based on the grades for English language (L1) and 4 relevant subjects(R4). An additional requirement for admission to junior college or centralized institution is a minimum grade of D7 for mother tongue or E8 for higher mother tongue.

For entering polytechnic, selection criteria vary from course to course. Generally, ELR2B2 is used. EL represents the grade for English language, R2 represents the grades of two relevant subjects chosen from two groups and B2 represents the grades of any two other subjects. An additional common minimum requirement for most courses is C6 in mathematics and D7 in English language (Lim & Tan, 1999).

Lim & Tan (1999) provide the general number regarding placement into post- secondary institutions as follows. A typical cohort about 32,000pupils sit for the GCE O-level examination, of which about 10,000 (31%) proceed to pre-university courses at junior colleges or centralized

institutes and about 16,000 (50%) enroll in polytechnics for diploma courses (Lim & Tan, 1999). For example, in 2000, 32,672 sat for O-level examination. Of all, 32,600 or 99.8% were awarded at least one O-level exam certificate; 92.3 % passed at least three; 77.8% passed at least 5 O-level (Ministry of Education, 2001).

There are bonus points students can earn in the following cases. On the application to junior college, pupils who obtain A1 to C6 in both English language and higher mother tongue at the O-level exam are awarded two bonus points. Two bonus points are also awarded to students who are applying from the secondary schools that are affiliated with junior college.

At the end of fourth year of secondary school, students in N course sit for the N-level examination. GCE N level grades are generally recognized by employers in Singapore. The grades of 1,2,3,4,5, and U (Ungraded) are awarded for each subject. In order to proceed to the fifth year of the N(A) course students have to obtain an aggregate of 10 or less for the best 3 subjects and a grade of 5 or better in English (Lim & Tan, 1999).

In 2000, 79.8% of Normal academic course students were eligible for promotion to the fifth year, while no students from the Normal technical course were eligible for Normal fifth year. (MOE Press Release 19 Dec 2000)

c. Post Secondary Education

1) Pre-University institutions: Junior College (16 schools) and Centralized Institutions (2 schools)

Junior college provides a two-year program which leads to the A –level exam. It offers a maximum of four Advanced (A) level and two Ordinary (AO) level subjects, which are mother tongue and general paper. Centralized institutes offer three year programs to prepare students for GCE A-level (Advanced level) examinations. Centralized institutions offer a maximum of three A-level subjects and two AO level subjects. Students at junior college could take a maximum of four A-level subject exam while students at centralized institution can take three A-level subject exams.

Two AO level subjects are taken by all the students. A-level exam results are used to select pupils for admission to the universities.

According to Tan and Lim (1999), a typical cohort of about 10,000 pupils sit for the A-level examination, of which about 8,000 (80%) proceed to the universities. In 2000, 12,192 students sat for the A-level examination. Of these 12,108 or 99 % obtained at least one A-level pass. The passing rate for minimum 2 A level and 2 AO level including general paper is 85.4 % (10, 418). (Ministry of Education, 2001)

2) Polytechnics (4 schools)

Two and three year diploma and certificate programs are offered in polytechnics. Each program requires either A-level or O-level qualification for admission.

3) Institute of Technical Education (1 school)

Various kinds of diploma and certificate programs are offered. The length of program varies. Students can apply to programs with N-level or O-level qualification.

4) University (4 universities)

Universities award degrees. The A-level certificate is required to apply to universities.

According to the numbers provided by Lim and Tan (1999), it is estimated that about 76% of the Primary One cohort group sit for the O-level examination either in their fourth of fifth year, 23% of Primary One cohort enters a Pre-University educational institution, either junior college or centralized institutions. Of the Primary One cohort, 18.4% enrolls in one of the universities in Singapore. However, this estimate does not include students who chose going abroad for their tertiary education. In 1990 the proportion of Singaporeans studying at universities abroad is about one third of the student population attending domestic university (Rahim, 1997).

F. Outcomes of Education

In this section, outcomes of education will be presented from the following perspectives: literacy rate and income.

1. Literacy Rate

The literacy Rate has increased in Singapore for the past three decades. In 1970, 68.9% of people aged 15 years and over were literate at least in one language, while in 2000, it was 92.5% (Department of Statistics, 2001). Literacy in two languages, English and mother tongue, may reflect the impact of education in the Singaporean context. Below, I will explore the language spoken at home because it may indicate the effects of the bilingual policy.

The literacy rate in two or more languages (including Chinese dialects) has increased from 45% in 1990 to 56% in 2000. Among the literate resident population aged 15 years and over, literacy in English increased from 63% in 1990 to 71% in 2000.

Among various Chinese languages, more people are speaking Mandarin, which is mother tongue for Chinese, than Chinese dialects at home. Chinese dialects are disappearing among younger generations. In 1990 51.4% of Chinese aged 15 to 24 spoke Chinese dialects most frequently at home, however, in 2000 only 18.4% of this age group did. The younger Chinese spoke English more frequently than older Chinese. In 2000, 35.8 % of Chinese aged 5-14 years spoke English compared with 21.5% of youth aged 15-24 years and 25.2 % of those aged 25-39 years. In 1990, 23.3% of Chinese aged 5-14 years old spoke English at home. (Department of Statistics, No.3, 2001).

Malays speaks their mother tongue, Malay, most frequently at home. In 2000, 9.4% of Malay aged 5-14 spoke English at home and 90.1% spoke Malay at home. In 1990, 8.3% of Malay aged 5-14 spoke English at home and 91.6% spoke Malay at home. Although the percentage of these speaking English at home increased, it did not increase as much in Chinese households. The highest proportion of spoken English at home is observed in the age group of 25-39 in 2000. Among Malays in this age group 10.5% reported that they spoke English most frequently at home, while it was 7.3 % in 1990 (Department of Statistics, No.3, 2001).

Indians speak English at home with relatively high frequency: 43.6% of Indians aged 5-14 year old, 37.9% of 15-24 year old, 35.5% of 25-39 year old 35.5% of 40-54 year old spoke English most frequently at home in 2000. In 1990, 39.6% of Indians aged 5-14, 37% of aged 15-24 years, 36.3% of 25-39 years, and 25.7% of 40-54 years spoke English most frequently at home (Department of Statistics, No.3, 2000) (See Appendix 4).

There is a relationship between language spoken at home and educational qualification of individuals. The higher the educational qualifications acquired by Chinese, Malay, and Indians, English is more likely to be spoken in their home. For example, 6.8 % of Chinese who do not have educational qualification at any level, 27.3% of Chinese who attended secondary school, 32.5% of Chinese who acquired post secondary education, and 47.1% of Chinese who have university education speak English at home. For Malays, who more of whom average more speak their Mother Tongue at home (92.3 % speak Malay and 7.2% speak English), this trend appears clearer than in the Chinese case. English is spoken at home by 2.8% of Malays who do not have educational qualifications, 9.4% of who acquired secondary school education, 15.7% of who have qualification of post secondary education, and 38.1% of who have acquired university education. Indian also follows the same pattern except for the decline at the level of university educated Indians: 19.4% of who do not have educational qualification, 39.9% of who have secondary school qualification, 48.7% of who have qualification in post secondary education, and 42.6% of those who have a university education speak English at home (Singapore Department of Statistics, No.3, 2000) (See Appendix 5).

The type of dwelling in which one lives is used as a barometer of the socioeconomic status of people in Singapore. It is observed among Chinese, Malays, and Indians that as their dwellings become larger, English is more likely to be spoken there. 55.9% of Chinese, 41.1% of Malays, 64.9% of Indians, who are living in private flats or house speak English at home, while 4.4% of Chinese, 3.6 % of Malay, and 11.4% of Indians living in Housing Development Board (HDB) flat

with one or two rooms speak English at home. Chinese dialects, which are not taught at school as academic subjects, are spoken with lesser frequency as dwellings become larger. For example 63.3 % of Chinese living in HDB with one or two rooms speak Chinese dialects at home, while 17.1 % of Chinese living in private flats and housings speak them at home. (Singapore Department of Statistics, 2000 No.3)

In Summary, the above data suggest that Singaporean's literacy may reflect the bilingual policy. English is more commonly spoken among people with high socioeconomic status.

2. Income

Educational attainment appears to be related to income. The median income of a university graduate was $7,929, while polytechnic graduates earned average $5,324 in 2000. The median income of households that have at least one member with secondary or upper secondary qualification was $3,467, while that of households that did not have anyone with secondary qualification was $1,443 in 2000. Household with a university degree holder earned 5.5 times more than those households that did not have anyone with secondary qualifications. Households that had a graduate from a polytechnic earned 3.7 more than the median income of households that did not have secondary-educated members (Singapore Department of Statistics, No7, 2000).

The gap between the households at university graduates, polytechnic graduate households, and households with non secondary educated members has widened since 1990. In 1990 households with university degree holder earned 4.6 times ($6056) and those households with polytechnic diploma earned 3.1 times ($4061) more than the median income of households that did not have secondary educated members ($1304) (Singapore Department of Statistics, No.7, 2000). It was observed that the gap in income between people with high educational qualifications and low educational qualifications has widened (See Appendix 6).

G. Summary

In this section, the Singaporean educational system was described with special focus on streaming policy. A relationship was observed between educational qualification and income. This seems to reflect the government's educational policy based on meritocracy, which views education as a vehicle for social mobility. Attainment of higher education seems to be a significant factor for Singaporeans to earn higher incomes. In the following section, I will explore differences in educational outcome and output among different ethnic groups.

III. DIFFERENCES AMONG ETHNIC GROUPS

A. Introduction

Differences in the attainment of higher education and educational performance among ethnic groups will be explored in this section. In this exploration I would like to identify the challenges Malay and Indian students face in order to improve their chances of attaining higher educational institutions and improving their academic performance.

This section explores the following aspects: a) trend of attainment to higher education by different ethnic groups; b) trends in academic performance by Malays and Indians in relation to the national average. First, I will explore the trend of attainment to higher education by Malays and Indians. Second, I will trace their academic performance in national examinations.

As observed in the previous sections, performance on the national examination determines attainment of higher education in Singapore. My exploration in this section is based on the assumption that the reason Malays and Indians have such low attainment to higher education can be understood by analyzing their performance on the national exams. My exploration is also based on the assumption that students choose to go to higher education if they score well at the national examinations. Hence, my exploration in this section will not consider other factors, such as the socioeconomic status of families that may prevent children from pursuing higher education despite doing well in academics. I have not explored family socioeconomic status because the Singapore

government provides financial aid to students who are academically strong and who are from families with low socioeconomic status. My exploration in this section strictly focuses on academic performance. The implications of my exploration will be discussed at the end of this section by comparing it with other research.

B. Attainment to Higher Education

This section explores the attainment to higher education among different ethnic groups. The data indicate that Indians and Malays are less represented than Chinese in both polytechnic and university.

1. Percentage of Primary One Cohort Admitted to Polytechnic and University

Polytechnics and universities are the institutions that prepare students for highly paid occupations. The percentage of the Primary One cohort admitted to polytechnics and universities has been increasing among all ethnic groups. Overall the percentage has increased from 10 % in 1980 to 36% in 1990, and to 59% in 1999. However, the percentage varies among ethnic groups: 68 % of Chinese are admitted to either polytechnic or university, while 37% of Indians and 28% of Malays are admitted to either of them (Ministry of Information and The Art, 2001) (See Appendix 7).

2. Percentage of Primary One Cohort Admitted to University

Percentage of Primary One cohort admitted to university by ethnic group in 1999 is as follows. Chinese 25 %, Indians 10%, and Malays 4.2%. Indians and Malays are less representative than Chinese in universities (Ministry of Information and The Art, 2001). The gap between Malays and Chinese is higher in university than in polytechnic.

C. Academic Performance of Malay and Indian students

This section explores the academic performance of Malay and Indian students on the milestone national exams. This exploration will suggest types of national exams and academic

subjects in which Malay and Indian students perform below the national average. In the analysis I will focus on two aspects: a) the percentage who sit for the national exams; b) the performance of each ethnic group on each exam. These two approaches seem to be more comprehensive because the streaming determines the eligibility of taking national exams.

1. Primary School Leaving Exam (PSLE)

a. Who Sits for the PSLE? How Many Pass?

Overall, 98% of Primary One cohort sat for the PSLE in 1999; 97% Malay, 98% Chinese, 95% Indian sat for PSLE. There is little difference among ethnic groups: students of three ethnic groups equally survive until they sit for PSLE.

There is variance in the results on the PSLE among ethnic groups: 91% of Malay, 98% of Chinese, and 94% of Indian students are admitted to secondary school (Ministry of Information and The Art, 2001). Interestingly, the percentage of the Primary One cohort eligible for secondary school indicates a higher percentage for Malay students (95%) than the percentage of eligible students among PSLE students (91%). The difference of 4 points may suggest that Malay students repeat Primary Six until they pass the PSLE (Ministry of Information and The Art, 2001). However, the repetition rate of Malay students is not available at this time.

Disparities among ethnic groups in passing PSLE have been closed since 1980. However, Malay and Indian students have been consistently below the overall passing rate, while the Chinese have been consistently above the overall passing rate. Malays and Indians are lower than the national average with 7.2 point and 4.2 point respectively in 2000 (Ministry of Education, 2001) (See Appendix 8).

b. What Subjects Do Malay Students Fail?

Malay students perform below the national average on mathematics and science on the PSLE. The passing rate in science and mathematics improved over time, however, Malays' passing rate is below the national average. In 2000, Malay's passing rate in mathematics was 64.6%, which

is 22.1 point below the national average. The passing rate in science was 82%, which is 11.3 points lower than the national average in 2000 (Ministry of Education, 2001).

The passing rate in English on the PSLE in 2000 was 98.3%, which is not significantly behind other groups: Chinese 98.9%, Indian 99.4 %, Others 99.4 % and overall 98.9%. In 1987 Malay's passing rate in English was 9.6 point below the national average (Ministry of Education, 2001). Malay has caught up with the national average (See Appendix 9).

The above data on academic performance does not include EM3 students who represent 15 % of the least academically oriented students.

c. What Subjects Do Indian Students Fail?

The report of PSLE results indicates that Indian students perform poorly in mathematics, science, and mother tongue compared to the national average. Although passing rates in mathematics and science improved over time, the passing rate for Indians fell below the national average. In 2000, the passing rate for Indians in mathematics was 72.3 %, which is 14.2 points lower than the national average and that of science is 87.7%, which is 5.6 points lower than the national average. The passing rate of Mother Tongue is 96.4% which is 2.3 points lower than the national average (Ministry of Education, 2001) (See Appendix 9).

2. GCE O-level Exam

a. Who Sits for the O-level Exam? How Many Pass?

Overall, 77% of Primary One Cohort sat for the O-level exam in 1999. The percentage of those who sat for the O-level exams varies among ethnic groups: 55% of Malay, 83% of Chinese, and 64% of Indian. Other data indicate that 88% of Malay, 95% of Chinese, 87% of Indians sat for either O-level or N-level exam (Ministry of Information and The Arts, 2001). Thus, it is inferred that Malays and Indians are more likely to be streamed in the Normal course than the Chinese.

There are variations among ethnic groups in the passing rate. In 1999 the passing rate of at least 5 O-level was 52.8 % among Malays, 82.6% among Chinese, and 66.2% among Indians.

Differences among the results of Malays, Indians, to the national average have not closed since 1991 (See Appendix 10).

b. What Subjects Do Malay Students Fail?

Malays fall below the national average in English and mathematics. Although the gap between the national average and the Malay's performance narrowed since 1987, Malay was still 22.9 points below the national average in the passing rate in mathematics and 9.9 points below the national average in the passing rate of English in 2000 The passing rate in science in 1999 was 62% (Ministry of Education, 2001) (See Appendix 11).

c. What Subjects Do Indian Students Fail?

Indians fall below the national average in mother tongue and mathematics. Indian students' passing rate in mother tongue in 2000 was 89.2%, while the national average was 94.6%. The gap has narrowed in the past decades from gap of 9.2 points in 1991 to 5.4 points in 2000. The gap between the national average and Indian students' performance in mathematics has narrowed since 1987. However, the passing rate for Indians in mathematics is 13.8 points lower than the national average in 2000 (Ministry of Education, 2001; Ministry of Information and The Arts, 2001) (See Appendix 11).

3. GCE A-level Exam

a. Who Sits for the A-level? How Many Pass?

There is variation among ethnic groups in the percentage of the Primary One cohort taking the A-level exam: 6.8% of Malay, 31% of Chinese, 16% of Indian Primary One cohort sat for the A-level exam in 1999. The overall percentage was 26%. (Ministry of Information and The Arts, 2001). It seems that Malays and Indians are less represented in Pre-U institutions.

Passing rate of 2A and 2AO level is highest in Others (91.6%), followed by Indians (88.2%), Chinese (86%), and Malays (74.4 %) in 2000. The academic ranking of Indians and Chinese was reversed: Indians perform better than Chinese. Malay is the lowest of all.

For the past ten years, the gap between Indian and Chinese of passing rate of 2A and 2AO-level has narrowed. In 1990 Chinese students had 9.1 points higher than Indian. In 1998 Indian's result was higher than the Chinese. The gap between Malay and Chinese has closed; however, the improvement has not ongoing. For example, the gap was 11.6 points in 2000, while it was 6.3 points in 1999 (Ministry of Education, 2001) (See Appendix 12).

b. What Subjects Do Malay Students Fail?

The common academic subjects taken by all students on the A-level Exam are general paper and mother tongue; the available data is only on these two subjects. Malay students' passing rate in general paper was lower than the national average. In 2000, Malay's passing rate was 7.2 points lower than the national average; in 1999 it was 1.4point. From 1995 to 1999 the gap has narrowed. As of yet, there is no explanation for the sudden drop in 2000. Malays continually perform higher than the national average in mother tongue. In 2000 the passing rate was 99.3%, while the national average was 96.2% (Ministry of Education, 2001) (See Appendix 13).

c. What Subjects Do Indian Students Fail?

Generally Indian students' performance on the A-level is on a par with the national average. Indian students' performance on the general paper is higher than the national average. The performance of mother tongue is below than the national average. The passing rate in 2000 for Indian was 92.6%, while the national average was 96.2% (Ministry of Education, 2001).

D. Discussion: What are the Challenges Malay and Indian Students Face?

The above examination identifies challenges Malay and Indian students face at as follows. It is inferred that Malay and Indian students tend to be placed in the Normal Technical Course, which rarely produces students who can proceed to the O-level exam. This may result from Malay and Indian students' poor academic performance on the PSLE. Mathematics, science, and English seem to be challenges for Malays. For Indians, improvement in mathematics and science seems to be necessary.

Poor Academic performance in mathematics, English, and science at the O-level exam prevents Malays from entering Pre-U institutions. Performance in English at the O-level lags behind other ethnic groups, although English performance at the PSLE had caught up with the national average. Poor academic performance in mathematics and science at the O-level exam prevents Indians from entering Pre-U institutions.

The gap among ethnic groups in the results on the A-level exam is closer than that on the O-level exams. However, still Malay students perform poorly. The general paper seems to be a challenge for them because it requires a sophisticated command of English. Indians do better in general paper than other ethnic groups.

The passing rate on the A-level examination is higher among Indians, however, this may not indicate that Indians perform better than the Chinese. The admission rate into universities among those who pass the A-level was 77% of Malay, 89% of Chinese, and 71% of Indians. The overall admission rate was 86% in 1999. This may indicate that Malay and Indian students tend to enroll in polytechnic rather than the university despite the fact that they passed the A-level exam. Further data is needed to investigate the reasons they decide to do this (See Appendix 14).

E. Implications for Further Research

In this section I would like to discuss the possibilities for further research into Malays and Indians' low attainment to higher education and poor academic performance. In order to acquire a more comprehensive description about the factors that may affect the academic performance of Malay and Indian students, the following research may need to be conducted.

First, data about the academic performance and the ethnic component in the EM3 stream need to be collected. Second, the factors that may prevent Malay and Indian students from performing well in mathematics and science need to be researched. Malay and Indian students lag behind in these two subjects at the primary school level. Third, the factors that may prevent Malay students from performing well in English need to be researched. The percentage of those who are

bilingual in English and mother tongue (Malay) is the highest in Malay of all ethnic groups. However, performance in English has been the worst among Malays. Detailed analysis of these difficulties among Malay students facing English in schools and other academic subjects is needed. Fourth, the factors that may have affected the improvement of Malay students performance in English on the PSLE need to be researched. At the same time, the factors that may impede Malay students' performance in English at the O-level need to be researched. Fifth, the factors contributing to the better performance of Indians on the A-level exam need to be researched. At the same time, the reasons that a relatively large percentage of Indian and Malay students who pass the A-level enroll in polytechnic need to be researched. Is it because of their academic performance or are there other factors influencing this decision other than academic performance?

The above discussion derives from my analysis of the academic performance of ethnic groups on the national exam. Below, I would like to discuss several other aspects that may need to be researched in order to explain the low attainment in university education by Malays and Indians. The analysis may need to include socio-economic factors.

First, how the socioeconomic status of students' families affects their school choice and academic performance needs to be researched. I ignored this point assuming that the government's financial assistance to students from poor families is satisfactory for them in pursuing education. In addition, government and government-aided primary schools, secondary schools and junior colleges have low tuitions. Students pay about $5 a month as miscellaneous fees at primary school, $13 a month as miscellaneous fees and subsidiary fees for secondary schools, and $15 a month as miscellaneous fees and subsidized school fee at junior colleges (Ministry of Education, 2001). The government provides Edusave Scholarship to the top 10% of students in each stream of government and government aided secondary schools, which amounts to about $300 to $500 a year. The government also provides scholarships to the top 25% of students in independent secondary schools,

which covers tuition. However, I could not find data on the impact of those schemes on decisions about school choice and academic careers for each ethnic group.

Second, the gap among schools and its impact on the output of education may need to be researched. There are government schools, government aided schools, autonomous schools, and independent schools in Singapore. Independent schools and autonomous schools produce relatively better results on the national examination (Ministry of Education, 2001). The impact of those schemes on educational performance on the national exams and access to those special schools among ethnic groups needs to be researched.

Third, research on successful Malay and Indian students needs to be continued in order to understand the factors that induced those students to pursue higher education. For example, research conducted by Mendaki (2001) provides various factors other than academic performance, that might have affected students' decisions about pursuing post secondary education. Those factors include perceptions about each educational institution, existence of role models, guidance by principals and teachers, and pressures from family members, relatives, and peer groups. This kind of research provides factors that are not limited to academic performance in pursuing higher education, hence the implications for non-academic intervention programs may be drawn.

IV. SUMMARY AND CONCLUSION

In this sector analysis, I explored Singapore's educational system with special focus on the selection system of students. I examined differences among ethnic groups in attainment of higher education and possible factors responsible for it from the aspect of academic performance. This exploration revealed that Malay and Indian students have difficulties in mathematics and science from the primary school level. Malay students experience difficulty in English, which clearly appears on the O-level exam. In order to catch up with the national average, intervention in this area seems to be necessary.

As I discussed in the previous section, more research is needed to acquire a comprehensive description of the factors that might affect educational attainment and academic performance of each ethnic group in Singapore. My analysis focused on the academic performance observed on the national exams. This analysis provided the areas of academic subjects in which each ethnic group may experience difficulty. There are more approaches that may provide insights into why Malay and Indian students attain higher education to a lesser degree than Chinese students and why Malay and Indian students' academic performance is poorer than Chinese students. These researches may provide implications for intervention programs so that Malay and Indian students can catch up with the national average in their attainment to higher education.

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Appendix 1 Demographic Data

1) Population (2000)

Resident	3E+06
Nonresident	754500
Total	4E+06

2) Ethnic distribution (%) (2000)

Chinese	76.8
Malays	13.9
Indians	7.9
Others	1.4

Singapore Department of Statistics (2000).

Appendix 2 Income by Ethnic Group

1) Average Monthly Household Income from Work

	Unit	1980	1990	2000
Total	dollars	1200	3076	4943
Chinese	dollars	1239	3212	5219
Malays	dollars	915	2246	3148
Indians	dollars	1114	2859	4556
Others	dollars	2276	3885	7250

Singapore Department of Statistics (2000).

2) Household Median Income from Work by Ethnic Group of Head

	Unit	1990	2000
Total	dollars	2296	3607
Chinese	dollars	2400	3848
Malays	dollars	1880	2708
Indians	dollars	2174	3387
Others	dollars	2782	4775

Singapore Department of Statistics(2000)

Appendix 3 Income Distribution

1) Resident working persons aged 15 years and over, Distribution by Monthly Income from Work

	Unit	1980	1990	2000
Total	%	100	100	100
Below $500	%	63.3	4.1	3.5
$500-$999	%	24.9	36.9	8.2
$1000-$1499	%	6	26.8	14.9
$1500-$1999	%	2.5	13	15.5
$2000-$2499	%	1.3	6.5	13.6
$2500-$2999	%	0.6	3.8	10
$3000-$3499	%	0.4	2.5	8.3
$3500-$3999	%	0.2	1.7	5.2
$4000 &over	%	0.7	4.6	20.7

Singapore Department of Statistics (2000).

Appendix 4 Language Spoken at Home by Ethnic and Age Group

1) Residetn population by languages most frequently spoken at home and age group

Ethnic Group/	5--14		15-24		25-39		40-54		55&Over	
Language	1990	2000	1990	2000	1990	2000	1990	2000	1990	2000
Chinese	100	100	100	100	100	100	100	100	100	100
English	23.3	35.8	19.9	21.5	24.6	25.2	16.1	25.1	5.3	9.9
Mandarin	57.6	59.6	28.5	59.8	30.4	46.5	24.8	43.9	6.1	17.8
Dialects	18.9	4.3	51.5	18.4	44.8	28	58.8	30.7	87.7	71.8
Others	0.2	0.4	0.2	0.3	0.3	0.3	0.4	0.3	0.9	0.5
Malays	100	100	100	100	100	100	100	100	100	100
English	8.3	9.4	7	8.2	7.3	10.5	3.4	6.1	0.7	1.7
Malay	91.6	90.1	92.9	91.3	92.6	89	96.4	93.4	99.1	97.6
Others	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.5	0.2	0.6
Indians	100	100	100	100	100	100	100	100	100	100
English	39.6	43.6	37	37.9	36.3	35.5	25.7	35.5	13.4	20.5
Malay	18.4	12.9	15.1	14.7	14.5	9.6	13.7	12.5	9.4	9.2
Tamil	35.6	36.3	41	40.6	41.3	43	47.5	43.6	56.2	54.6
Others	6.3	7.2	6.9	6.7	8	11.9	13	8.4	21.1	15.7

Department of Statistics (2000).

Appendix 5 Language Spoken at Home by Ethnic Group and Educational Qualification

1) Resident Non-Student Population Aged 15 years and over by Languages Most Frequently Spoken at Home and Higher Qualification Attained, 2000

Ethnic Group Language	Total	No	Primary	Secondary	PostSec	University
Chinese	100	100	100	100	100	100
English	21.3	1.3	6.8	27.3	32.5	47.1
Mandarin	40.6	22.8	50.7	46	44	34.7
Dialects	37.8	75.5	42.2	26.5	23.2	17.5
Others	0.4	0.4	0.4	0.2	0.2	0.6
Malays	100	100	100	100	100	100
English	7.2	0.6	2.8	9.4	15.7	38.1
Malays	92.3	98.8	96.7	90.2	84	60.5
Others	0.5	0.6	0.5	0.4	0.3	1.4
Indian	100	100	100	100	100	100
English	32.7	6.5	19.4	39.9	48.7	42.6
Malay	11.1	18.1	15.8	12.2	7.4	0.9
Tamil	45.3	64.5	59	40.6	32.8	32.3
Others	10.9	10.9	5.7	7.3	11.1	24.2

Department of Statistics (2000)

Appendix 6 Income by Educational Qualification

1) Household Income from work by educational attainment of household (dollars)

Educational Attainment	Average household income		Median Household Income	
	1990	2000	1990	2000
Total	3076	4943	2296	3607
Graduate Households				
University Graduate	7118	9827	6056	7929
Polytechnic Graduate	4529	5932	4061	5324
Non-Graduate Households				
At least one member with secondary or Upper Secondary Qualification	3066	4105	2603	3467
Others	1504	1667	1304	1443

Department of Statistics. (2000)

Appendix 7 Percentage of Primary One Cohort Admitted to Poly/University by Ethnic Group

1) Percentage of P1 Cohort Admitted to Polytechnic/University

	1980	1990	1999
Malay	1.3	13	28
Chinese	13	42	68
Indian	4.3	18	37
Overall	10	36	59
Ministry of Information and The Arts (2001)			

2) Percentage of P1 Cohort Admitted to University

	1980	1990	1999
Malay	0.5	2.9	4.2
Chinese	5.9	17	25
Indian	3.5	8	10
Overall	4.9	15	20
Ministry of Information and The Arts (2001)			

3) Percentage of P1 Cohort Admitted to Polytechnic

	1980	1990	1999
Malay	0.8	10.1	23.8
Chinese	7.1	25	43
Indian	0.8	10	27
Overall	5.1	21	39

Appendix 8: PSLE by Ethnic Group

1) Percentage of Primary One Cohort who Sit for the PSLE

	1980	1990	1999
Malay	83	81	97
Chinese	92	93	98
Indian	81	84	95
Overall	89	91	98
Ministry of Information and The Arts (2001)			

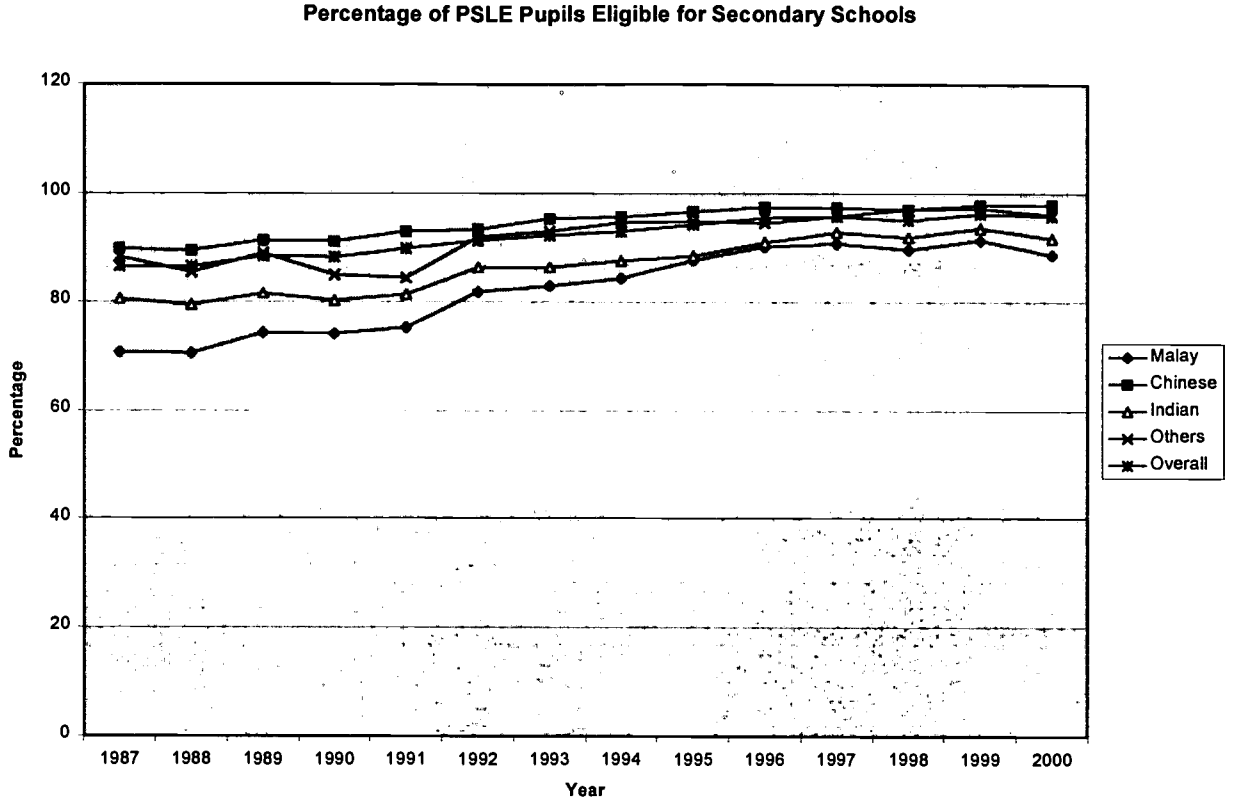
2) Percentage of P1 Cohort Eligible for Secondary School

	1980	1990	1999
Malay	71	73	95
Chinese	86	91	98
Indian	73	78	94
Overall	83	87	97
Ministry of Information and The Arts. (2001)			

3) Percentage of PSLE Pupils Eligible for Secondary School

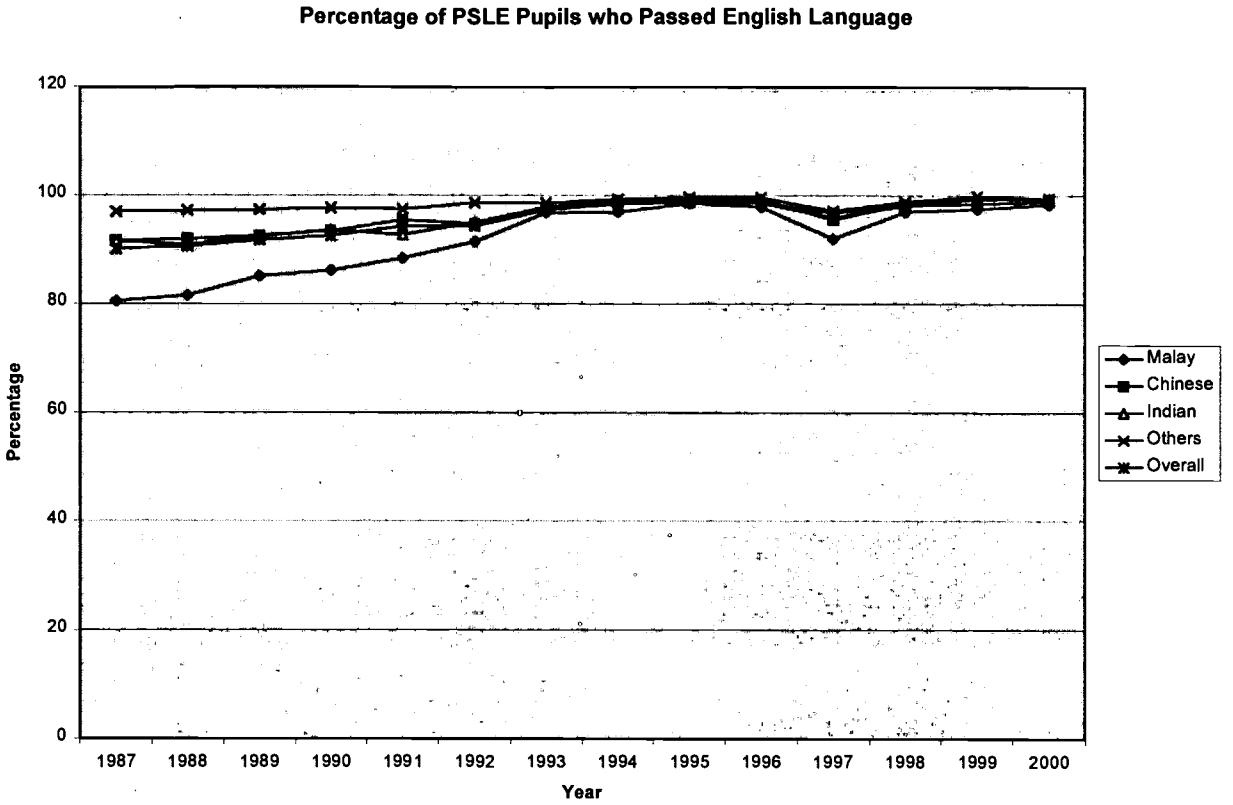
	1980	1990	1999
Malay	72	74	91
Chinese	86	91	98
Indian	81	80	94
Overall	84	88	96
Ministry of Information and The Arts. (2001)			

Appendix 8: 4) Percentage of PSLE Pupils Eligible for Secondary Schools

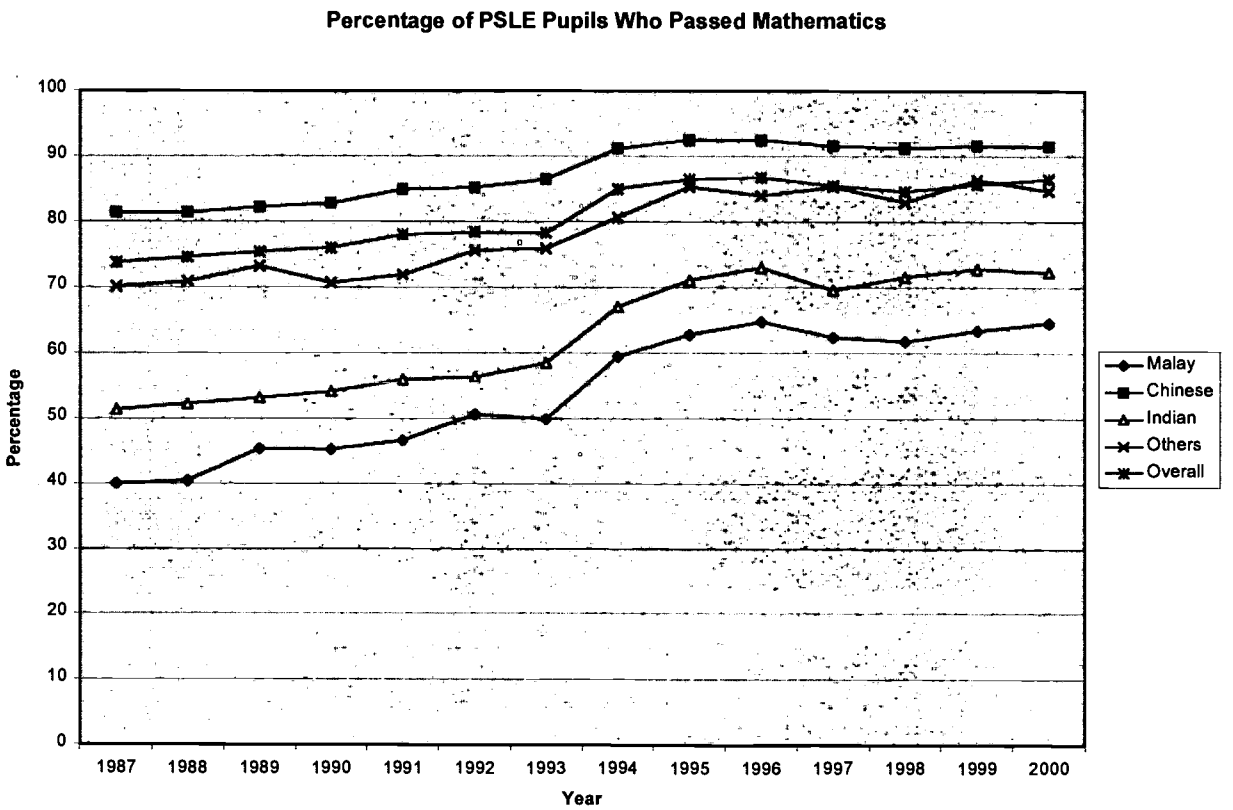


Source: Ministry of Education (1997, 2001)

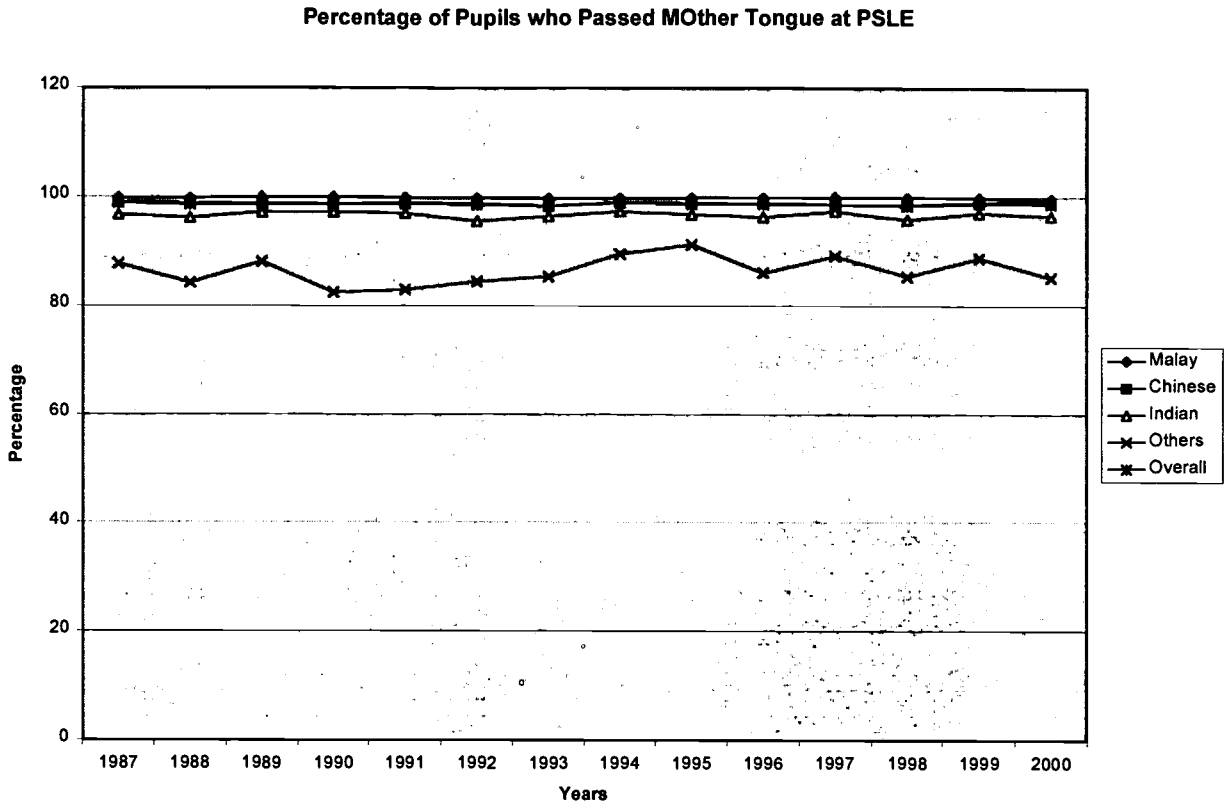
Appendix 9: PSLE Results by Academic Subjects



Source: Ministry of Education (1997, 2001)



Source: Ministry of Education (1997, 2001)



Source: Ministry of Education (1997, 2001)

Appendix 10: O-level by Ethnic Group

1) Percentage of P1 Cohort Taking O level Examination

	1980	1990	2000
Malay	37	50	55
Chinese	63	80	83
Indian	46	60	64
Overall	57	75	77

Ministry of Information and The Arts. (2001).

2) Percentage of P1 Cohort Completed Secondary School
(Sat Either N or O level Examination)

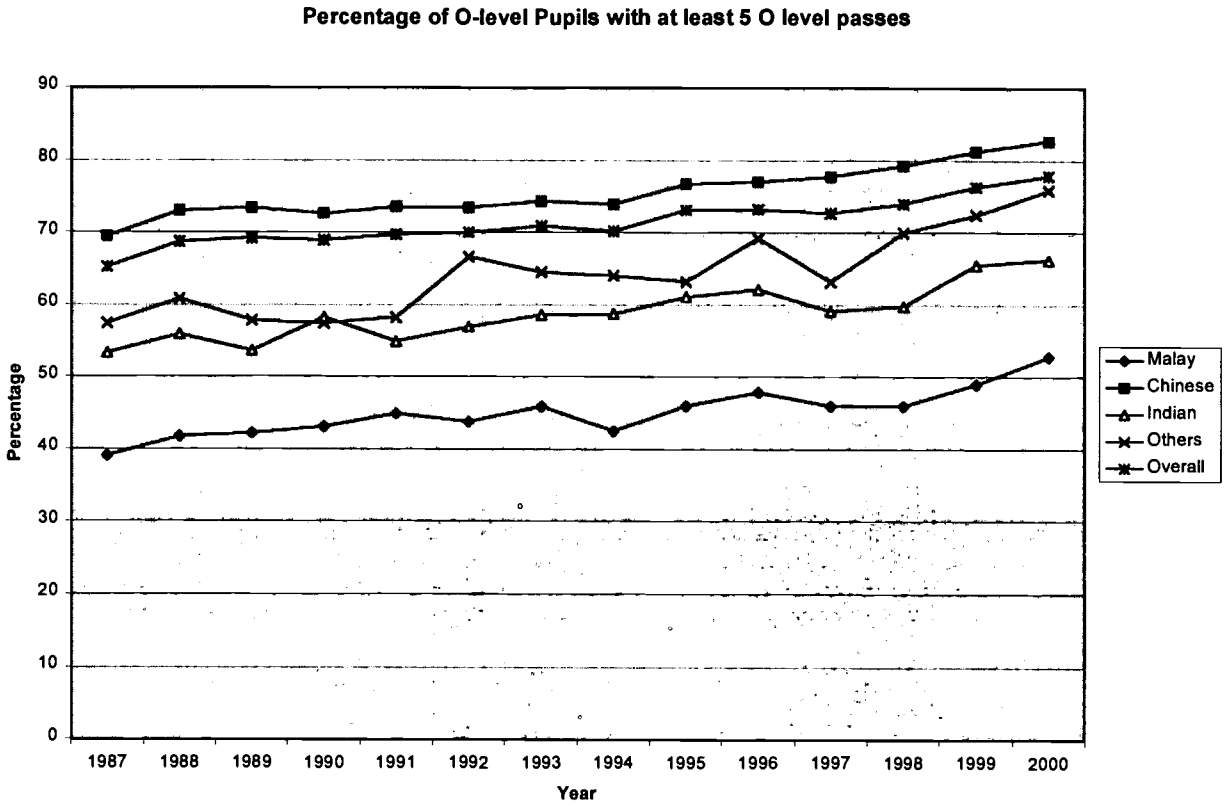
	1980	1990	2000
Malay	37	61	88
Chinese	64	84	95
Indian	46	68	87
Overall	58	80	93

Ministry of Information and The Arts. (2001).

3) Percentage of P1 Cohort Taking N level Examination

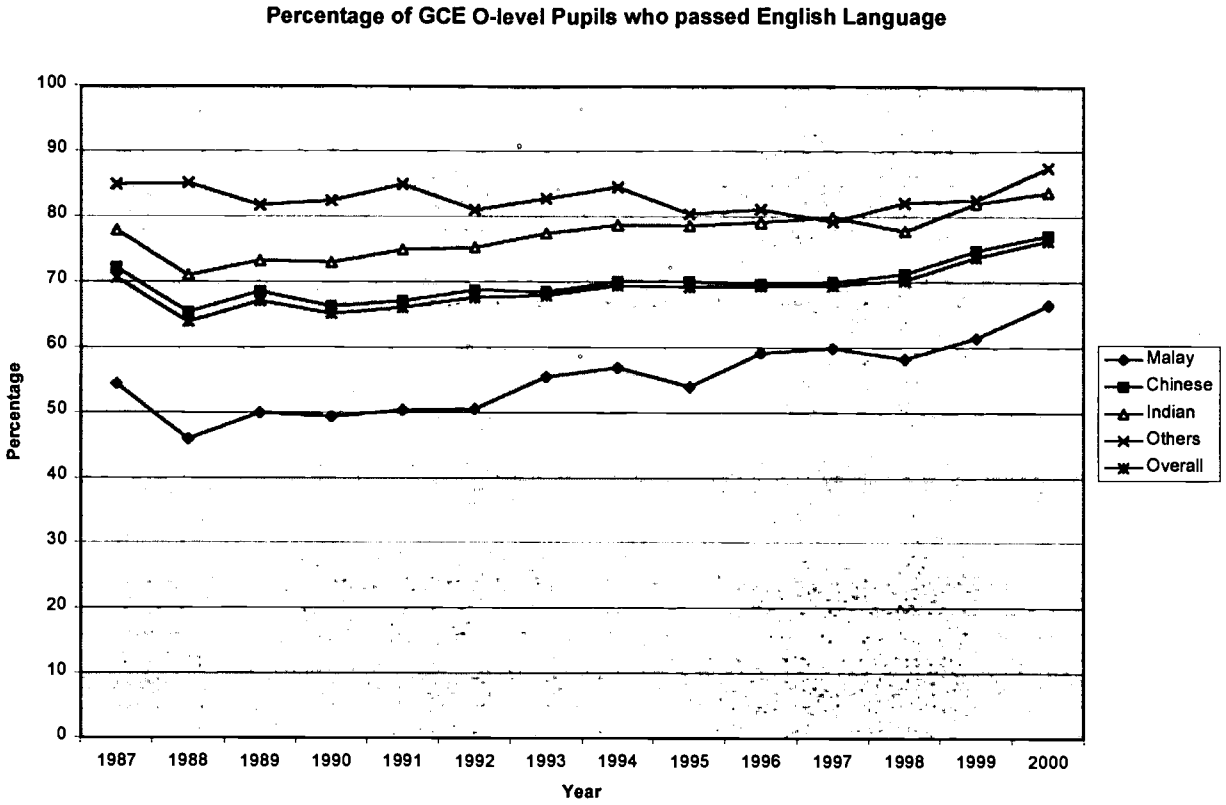
	1980	1990	2000
Malay	0	11	33
Chinese	1	4	12
Indian	0	8	23
Overall	1	5	16
estimated from the above numbers			

Appendix 10: 4) Percentage of O-level Pupils with at least 5-O level Passes

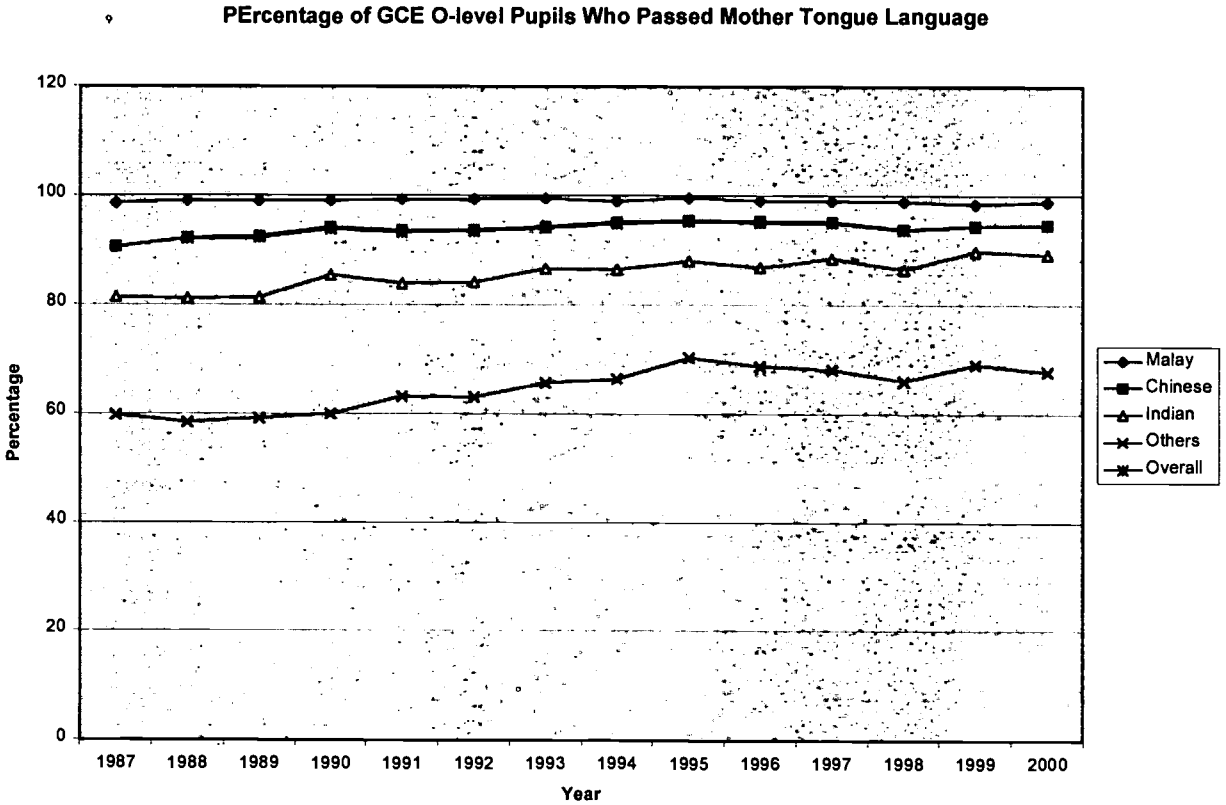


Source: Ministry of Education (1997, 2001)

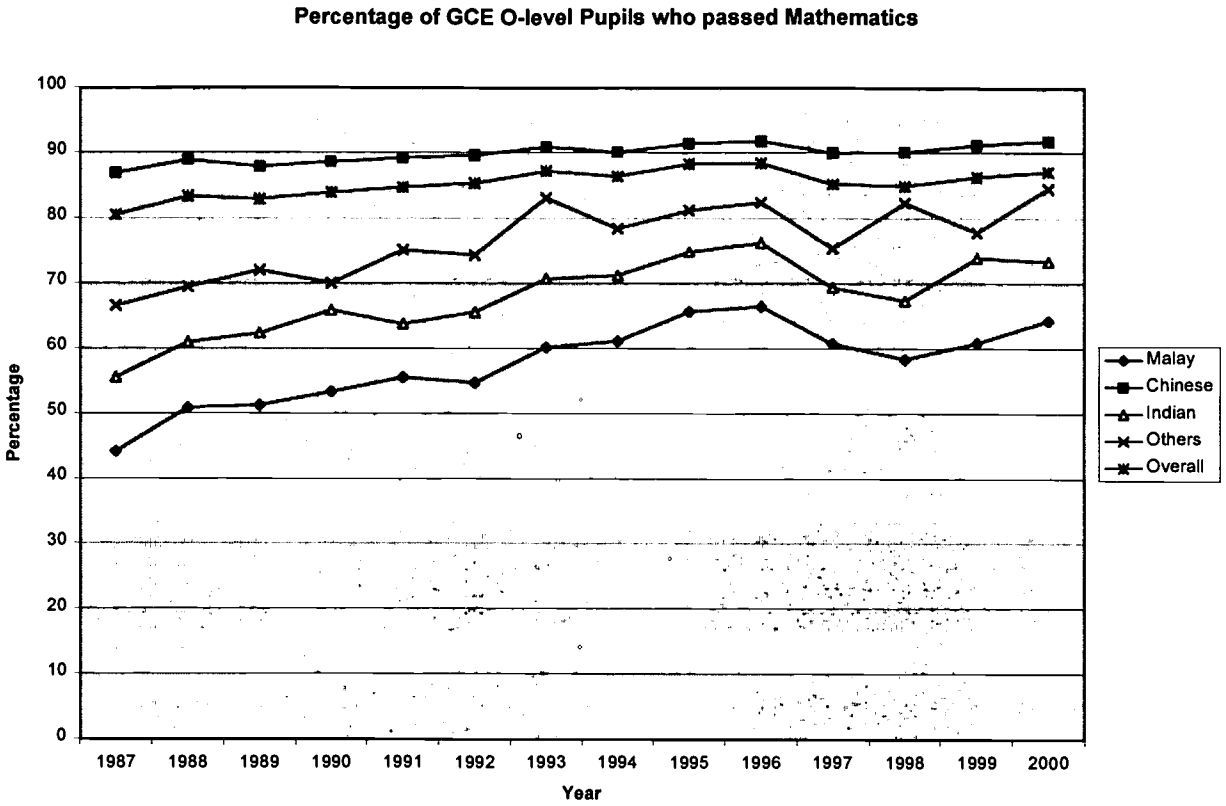
Appendix 11: O-level Results by Academic Subjects



Source: Ministry of Education (1997, 2001)



Source: Ministry of Education (1997, 2001)



Source: Ministry of Education (1997, 2001)

Appendix 12: A-level by Ethnic Group

1) Percentage of P1 Cohort Taking A-level

	1980	1990	1999
Malay	4.1	8.8	6.8
Chinese	15	29	31
Indian	9.8	21	16
Overall	13	26	26

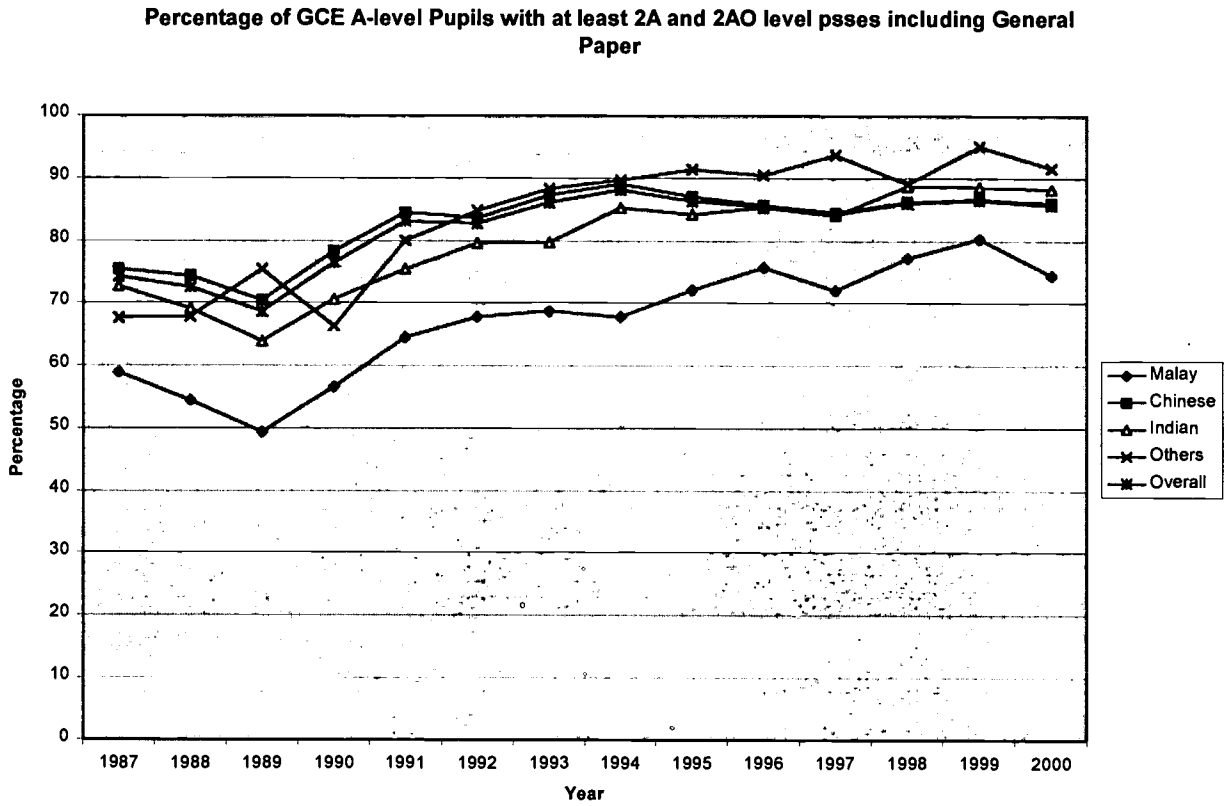
Ministry of Information and The Arts. (2001).

2) Percentage of P1 Cohort with at least 2A and 2AO passes, including GP

	1980	1990	1999
Malay	1.9	6	5.4
Chinese	9.8	24	28
Indian	6.7	16	14
Overall	8.2	21	23

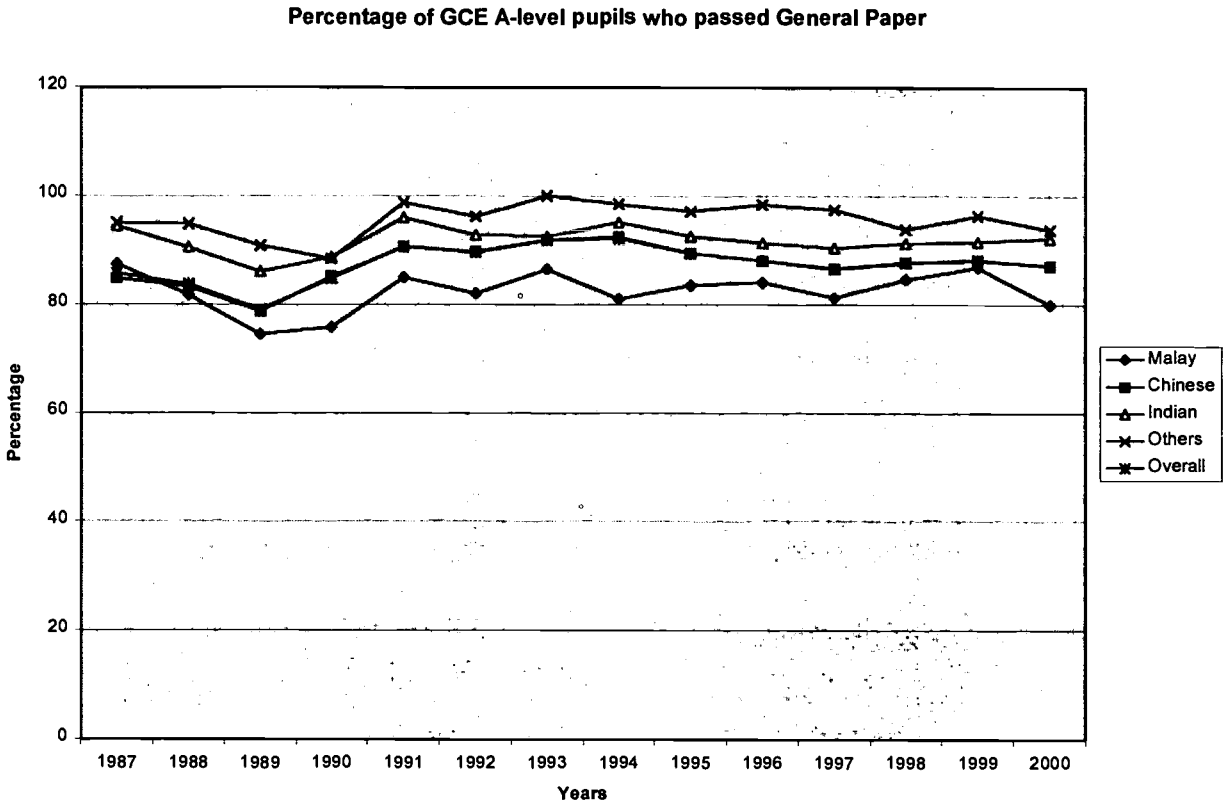
Ministry of Information and The Arts. (2001).

Appendix 12: A-level by Ethnic Group
3) Percentage of GCE A-level Pupils with at least 2A and 2AO level Passes
Source: Ministry of Education (1997, 2001)



Source: Ministry of Education (1997, 2001)

Appendix 13: A-level by Academic Subject



Source: Ministry of Education (1997, 2001)

Appendix 14: Percentage of A-level Passers who are Admitted to University

Student survival patters by using the record in 1999

	TakePSLE	Pass PSLE	Sit Olevel	Pass5O level
Malay	97	91	55	
Chinese	98	98	83	
Indian	95	94	64	
Overall	98	96	77	

	Sit for A-level	Pass2A2AO	Admitted to Poly or University	Admitted to University
Malay	6.8	5.4	5.4	4.2
Chinese	31	28	28	25
Indian	16	14	14	10
Overall	26	23	23	20
caution: All the number is based on 1999				

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