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Poverty and Student Performance in Malaysia

Osman Rani Hassan
Faculty of Economics and Administration
University of Malaya
Email: osmanrani@gmail.com

Rajah Rasiah*
Faculty of Economics and Administration
University of Malaya
Email: rajah@um.edu.my

Abstract: The objectives of this study are to identify the costs of schooling borne by parents, to assess the extent to which these costs place a financial burden on poor and rural parents and to examine the impact of parental income on student performance. The study surveyed both the rural and urban children in Malaysian secondary schools. The evidence underscores the importance of schooling expenditure and the distribution of the availability of schooling facilities to all. Providing sufficient financial assistance such as subsidies and scholarships for poor students should continue to be very high on policy agenda.

Keywords: schooling expenditure, secondary schools, student performance, Malaysia

JEL classifications: I21, I22, I31, I32

1. Introduction

There is consensus that the education of children is one of the key vehicles engendering the development of economies (UNESCO, 2009). However, the distribution of resources and its consequent effects on rural-urban schooling performance has remained a serious issue in most developing countries. Despite a rising focus by governments to target rural areas for special assistance, rural-urban disparities in education performance have remained a problem.

Malaysian education programmes have continued to emphasize increasingly on accessibility, equity and quality, strengthening the delivery system, as well as improving the achievement of rural students to reduce the performance gap between rural and urban areas (Malaysia, 2003: 102). During the Eighth Malaysia Plan (2001-2005), RM43.7 billion or 26% of the government development fund was allocated for education and training. Of this, about RM7 billion or 16 per cent was for primary school education and RM11 billion or a quarter was for secondary school education. On average, the

development expenditure for primary schools came to around RM440 per student per year as compared with RM1,740 for secondary schools.

This paper seeks to examine rural-urban differences in the performance of secondary school students among families, using poverty, ethnicity and gender as explanatory variables. The rest of the paper is organized as follows. Section 2 discusses enrolment in public education institutions. Section 3 provides the theoretical guide. Section 4 discusses the methodology and data used. Section 5 presents the analysis of the data collected. Section 6 presents the conclusions.

2. Student Enrolment in Malaysia

Table 1 shows student enrolment in public education institutions (excluding tertiary education institutions) in 2000 and 2005. About half of the students were in primary schools, and one-third in secondary schools.

Although the private sector complemented government efforts by providing places and quality education, the emphasis has always been at the post-secondary level. Presently, there is limited full private school participation in the school system apart from preschools and Islamic religious schools. Primary and secondary schools are essentially a government monopoly (Bakri, 2003).[1] There are two types of secondary public schools in Malaysia. The main one is the *sekolah kebangsaan* (national schools), where the main medium of instruction is Bahasa Malaysia, the national language; and the other is the *sekolah jenis kebangsaan* (national-type schools) where the main medium of instruction is either Mandarin or Tamil.

Table 1: Student Enrolment in Public Education Institutions, 2000 and 2005

Level of Education	Number of Students		Percentage of Total	
	2000	2005	2000	2005
Preschool* (4-6 years)	539,469	702,897	9.8	11.6
Primary	2,907,123	3,044,977	52.6	50.0
Lower Secondary	1,256,772	1,330,229	22.7	21.9
Upper Secondary	707,835	763,618	12.8	12.6
Post-Secondary	94,544	199,636	1.7	3.3
Teacher Education	23,740	34,672	0.4	0.6
Total	5,529,483	6,076,029	100.0	100.0

Note: * Includes private preschools.
Source: Malaysia (2006).

The cost of education is not only borne by the government, but also by parents (or carers/guardians) whether indirectly through taxes or directly through personal expenditure to support the day-to-day schooling activities. Parents have to meet a number of costs in order to educate their children. These include school fees, school uniform, books and equipment, pocket money for meals, school trips and other charges. While many of these are quite standard as they are determined by the schools and usually with the support of Parent-Teacher's Associations and the government, there are also expenditures which may vary widely among students, such as extra reading materials and tuition. Richer parents tend to spend more on their children's tuition and other educational materials such as books and computers.

While some parents may have to bear the total cost of schooling, some poorer parents may have gotten financial assistance through educational support programmes such as subsidies, scholarships, text books-on-loan and hostel facilities. During the period 2001-2003, for example, a total of RM728.1 million was spent by the government under these programmes benefiting 2.5 million students, especially from the low-income families in the rural areas and children with special needs. This amounted to RM290 per student during the period. In the 2007 Government Budget, for instance, RM310 million was set aside to benefit 1.5 million children from poor families. These children are expected to receive higher monthly school allowances – RM50 for those in primary school and RM70 for secondary school students, up RM20 from the previous year. The "zero exam fees" plan as stated in the 2007 Budget, which will affect 5.5 million pupils, is a step towards free and compulsory education – a direction many developing countries have taken.

As noted by Loke Yim Pheng, the secretary general of the National Union of Teaching Profession (NUTP), "the weakness in the education system is the wide disparity between the performance of pupils in rural and urban areas" (*New Sunday Times*, 10 September 2006). Efforts to reduce the performance gap between rural and urban schools have continued through the upgrading of teaching and learning facilities, including computer laboratories, and placement of more trained teachers in rural schools. Despite the extensive financial support by the government on schooling activities, such activities are actually not totally free. Parents still have to bear some costs of schooling their children.

3. Theoretical Considerations

Most econometric work on education and schooling tends to examine its relationship with earnings (e.g., Hansen *et al*., 1970; Chamberlain, 1977; Griliches, 1977; Griliches and Mason, 1972; Angrist, 1995; Angrist and Krueger, 1995, 1999). The standard models used examine the relationship

between years of schooling or qualifications and income levels (see Aturupane, 1997). This paper instead seeks to examine the relationship between schooling performance of students living in disadvantaged rural locations and those living in urban locations. We attempt to examine some of the important literature to establish the key explanatory variables in the study.

Existing works on the determinants of schooling performance have largely attempted to see the relationship between household or family incomes and schooling performance. Statistical evidence generally supports the view that students from better endowed families perform better in examinations. The adverse effects of poverty on student performance are well documented (see for example, Guskey, 1997; Sherman, 1997; Myers *et al*., 2004; Bernstein, 2007). Due to constraints of financial resources, available time, and parental educational skills, low income parents often have difficulty becoming active partners in their children's education (Hawkins, 2001).

Auxiliary approaches that relate to incomes but by particular neighbourhoods or rural-urban locations have also tended to support such a finding. Students from families residing in poor neighbourhoods and rural locations are found to perform less favourably than students from rich neighbourhoods and urban locations. Kling *et al*. (2007: 83) found that poor neighbourhoods performed substantially worse on a number of socioeconomic and health outcomes than those from rich neighbourhoods. The authors examined a number of variables – physical health, mental health, risky behaviour and education, controlling for gender, in a sample of youths. Education in the study took account of achievement in reading and mathematics using the Woodcock-Johnson Revised Broad Reading assessment and the Woodcock-Johnson Review Broad Math assessment respectively. The study found that voucher distribution to poor households on these variables affected positively the educational performance of female students but negatively the educational performance of male students (Kling *et al*., 2007: 90).

Lee (2010) established from a sample of youth criminals in Malaysia that there is a strong relationship between poverty and crime, and that poor criminals exited school early. However, contrary to Becker's (1968) claims, a complex cultural formation that emerges from poor localities that are also associated with single motherhood, family members or neighbourhoods with criminals where kids exit school early because of poor grades, seem to explain why the incidence of the poor committing crime is higher than for the rich. Yet, the most serious crime – i.e. murder – was committed by kids from rich families. Also, females are uninvolved in violent crimes with a few linked to male criminals only as accomplices.

For brevity and taking account of the distribution of households in Malaysia, neighbourhood effects in this paper is measured by rural-urban rather than poor-affluent neighbourhood demarcations. Unlike developed

countries where suburban and countryside locations may be inhabited by the rich, urban locations in Malaysia remain much better serviced with good schools, healthcare and other infrastructure support facilities. For poverty to have an impact it is first important to evaluate the extent to which these schooling costs place a financial burden on poor and rural parents, and only subsequently to examine the impact of parental income on student performance.

4. Methodology and Data

Since parents are very much concerned with the recent increase in the cost of education,[2] a message the government cannot simply ignore, and that there are insufficient data regarding the burden of education in Malaysia, the financial strain faced by families in sending their children to school requires attention. The lack of information may lead to an inability to act accordingly.

The general purpose of this study is to examine the impact of poverty on student achievement. Poverty in Malaysia is generally associated with the rural and Bumiputera (indigenous) population. This is further compounded by a lack of school facilities, higher rates of teacher mobility, and poor educational environment. Studies have shown that poor students perform worse when they attend high poverty schools dominated by poor children, as is typical of schools in rural areas, but academic achievement improves when poor students attend schools with more affluent classmates, as is typical of urban schools (US Commission on Civil Rights, 2004).

The more specific objectives of this study are straightforward: firstly, to identify what schooling costs are borne by parents; secondly, to assess the extent to which these costs place a financial burden on poor parents, which could potentially result in social exclusion; and thirdly, to examine the impact of schooling expenditure on student performance, which might explain why rural poor and Bumiputera children could be associated with low student achievement. This suggests the following hypotheses: (1) that parents with higher socioeconomic status, as reflected by higher income and education level, will spend more on their children's education, (2) higher expenditure on education would likely produce students with better examination results, and (3) poverty and ethnicity are invariably linked to academic performance. The study will in the process explore the differences in the costs of schooling between rural and urban children. However, the focus is limited to secondary education in *Sekolah Menengah Kebangsaan* (National Secondary Schools), defined as Federal Government fully-assisted schools.

A sample survey with a cross-sectional design was carried out in 2005. It covered 1,742 Form Four students from 25 secondary national schools in four states of Peninsular Malaysia: two representing the more advanced

states (Selangor and Perak) and two from the least developed states (Kelantan and Terengganu). Schools in each state, selected at random, are stratified by location: 60 per cent rural and 40 per cent urban.

The survey content was developed to focus on the schooling costs borne by parents of the selected students. Data were collected directly from survey respondents. One set was from students for information on personal information and school performance, which was based on the Form Three level *Penilaian Menengah Rendah* (PMR) (Lower Secondary Assessment) national examinations at the end of 2004. Another set was from their respective parents for information such as schooling expenditure, parental income, and educational attainment. Several features were in place to help respondents complete the questionnaires properly, including logic and consistency checks, and a glossary of terms and concepts.

The schooling expenditure, was divided as follows: school fees (annual school fees, including fees for co-curriculum activities), text books (including exercise books and stationery as required by schools), school uniform (including uniform for co-curriculum such as scouts, police cadets and sports), transport from home to school and back (such as fares for school bus and boats, and cost of petrol for personal vehicles), pocket money for school meals, tuition (extra tuition fees outside school hours for school subjects including extra reading and writing books, but excluding other learning activities such as music and religious classes not related to formal school examinations), and others (mainly hostel fees, educational insurance, and school trips). All costs were measured for one academic year based on the students' experiences in 2004. It was assumed that the cost at Form Three level represents an average for the overall secondary school level (Form One to Form Five).

Student performance was measured by PMR examination results. In general, a student has to take nine examination subjects in the PMR examinations. In this study, only results from five common subjects for all students were considered: Science, Mathematics, English, *Bahasa Melayu* (Malay Language) and History.

The data collected directly from the respondents were analyzed using descriptive statistics and the regression technique to estimate the impact of educational expenditure on student performance based on the PMR results.

5. Analysis and Discussion

From a sample of 687 respondents in urban areas and 1,055 in rural areas, the average income of parents (defined as combined financial incomes of father and mother) in urban areas was found to be RM21,417 per year as compared with RM12,438 (about 40 per cent lower) for rural parents. Urban parents

tend to support an average of 2.8 schooling children as compared with 3.2 for rural parents. Expressed in another way, 27 per cent of urban parents and, to a larger extent, about 40 per cent of rural parents have four or more schooling children. The differences in income and number of schooling children reflect the differences in the burden of schooling by these two groups of families. The results from detailed analysis are categorized in four main observations with respect to the following:

a) The breakdown of schooling expenditure
b) Schooling expenditure as percentage of income
c) Parental perception on the burden of schooling
d) The impact of schooling expenditure on student performance

5.1 The Breakdown of Schooling Expenditure

As shown in Table 2, the average cost of schooling overall was found to be RM1,782 per student per year. The cost in rural areas which averaged RM1,590 was about 22 per cent lower than urban areas (RM2,045). The main factor that contributes to the difference between rural and urban cost of schooling is the tuition fee. If we were to take away the non-compulsory components, grouped under 'Others' such as hostel fees, school visits and insurance, the total cost of schooling would be reduced by about 10 per cent. The financial burden of parents would be reduced further by about 10 per cent if we were to deduct the subsidies component.

Table 2: Average Annual Costs of Schooling per Student in Secondary Schools

Expenditure Items (RM per Year)	Urban	%	Rural	%	Total	%
School Fees (+ Curriculum)	96	5.3	112	7.7	106	6.6
Text Books + Stationery	202	11.1	188	12.9	194	12.0
School Uniform	120	6.6	119	8.2	120	7.4
Transport	270	14.8	194	13.3	224	13.9
Pocket Money	495	27.2	448	30.8	467	29.0
Tuition	503	27.6	231	15.9	348	21.6
Subsidies (+ Free Books)	136	7.5	164	11.2	153	9.5
TOTAL	1822	100.0	1456	100.0	1611	100.0
Others (Hostels + Visits + Insurance)	223		135		171	
GRAND TOTAL	2045		1590		1782	

Source: Authors' survey (2008).

In total, the biggest component of schooling expenditure is pocket money which comprised 29 per cent, followed by tuition (21.6%) and transport (14%). Parents spend an average of about RM2.00 per day per child as pocket money to cover meals, and RM348 per student per year on tuition. The high percentage spent on tuition reflects the attitudes of parents on the importance of learning and scoring good examination results. The other mandatory components, such as school fees and school uniform are relatively small, which together account for less than 15 per cent of total expenditure. Text books and stationery represent another 12 per cent.

While in general, the cost of schooling is lower in rural areas, the higher proportion of expenditure on pocket money, text books and school fees in rural areas compared with urban areas is mainly explained by smaller total income of rural parents. As expected, rural children received more subsidies (such as Textbook Loan Scheme, boarding facilities, *Skim Baucer Tuisyen* (Tuition Voucher Scheme), and *Tabung Wang Amanah Pelajar Miskin* (Poor Students Trust Fund)) which on average accounted for about 11 per cent of total expenditure compared with 7.5 per cent for urban children. The higher educational expenditure for an urban child was mainly explained by higher costs of text books, transport and tuition. An urban student spent an average of RM503 per year on tuition compared with RM231 for a rural student.

5.2 Schooling Expenditure as Percentage of Income

The burden of schooling is not only explained by the absolute cost but also by the ability of parents to pay for the cost. In other words, it is also a function of parental income and the number of schooling children that they have to support. Table 3 summarizes the burden of schooling in terms of cost per student as a percentage of income, as well as the total cost of schooling children as percentage of income.

On average, parents spend about 9 per cent of their income to finance the schooling of a child in secondary school. Because of lower income earned by rural parents, they tend to spend 10.5 per cent of their income on one child as against 8.3 per cent for urban parents. If we take into consideration

Table 3: Schooling Expenditure as Percentage of Income

	Urban	Rural	Total
Expenditure per schooling child	8.3	10.5	9.1
Expenditure on all schooling children	22.9	33.8	26.9

Source: Authors' survey (2008).

the number of children that parents have to support, the percentage becomes staggering.

On the assumption that the cost of educating a primary school child is 60 per cent of the cost of a secondary school child, in general, parents spend more than a quarter of their income on schooling their children. In rural areas, parents tend to spend about one-third of their income, while in urban areas the burden is less than a quarter of their income.

5.3 Parental Perception on the Burden of Schooling

Parents were also asked on how they feel about the burden of financing their children's education even after taking into account the subsidies that their children may have received. Every one out of five parents surveyed thought that meeting the schooling cost expected of them was a very heavy burden. More than half think that it was moderately heavy. Less than a quarter did not consider the schooling cost as a burden.

As shown in Table 4, quite surprisingly 24 per cent of urban parents considered the financial burden of schooling their children as very heavy. By contrast, only 20 per cent of rural parents thought that the burden was very heavy. Only 17 per cent of urban parents as against 27 per cent of rural parents considered schooling their children posed no financial burden. This may be explained by the generally higher costs of living in urban areas, plus a significant number of low income urban parents. In addition, the financial assistance received by rural parents must have helped eased their burden more than urban parents.

The survey also found that practically all parents think that education was important for their children. But nearly 15 per cent overall, irrespective of urban or rural parents, did not give much hope that their children's education could lead them to better lives in future. While these parents may be skeptical about their children's future, they still thought that having an education was certainly a better option.

Table 4: Perception of Parents on the Financial Burden of Schooling Their Children

Is schooling your children poses a financial burden to you?	Urban	Rural	Total
Yes, heavily	23.9	19.5	21.2
Yes, moderately	59.6	53.6	56.0
No	16.5	26.9	22.8

Source: Authors' survey (2008).

5.4 The Impact of Schooling Expenditure on Student Performance

Many studies worldwide have been done to explain student performance. The issues are not simple. Performance measurement can be as complex as the many goals societies have for their schools (World Bank, 2003). In Malaysia, the national assessment systems based on centralized examinations are essential for monitoring educational achievement. Since centralized examinations, such as PMR, make relevant information widely available they can be useful for generating accountability (Woßmann, 2003). In this study, PMR examination results on five compulsory subjects (Science, Mathematics, English, Malay and History) were used to measure the output, the overall performance.

Detailed results on inputs influencing student performance tend to vary across countries, time and content. However, nearly all empirical studies of measured learning achievements agree that home background accounts for most of the explainable variation in learning outcomes (Hanushek, 1995; World Bank, 2003). Half or more of the variation in performance across schools was due to variation in students' socioeconomic status, not to factors under school control. Schools normally account for only a small part of variance in student learning outcomes (OECD, 2001). Data on total expenditure per pupil are rarely available in analysis on student performance. Few studies available for developing countries do not seem to arrive at conclusive evidence on the influence of schooling expenditure on student performance (Velez *et al*., 1993; Hanushek, 1995). Past studies on Malaysia too tend to support the important role of socioeconomic status in explaining student performance (see for example, Wan Zahid, 1973; Asmah Bee, 1975; Awang Had, 1983; Sharifah, 1991). Since the centralized examinations can have a major impact on students' life, chances are parents who can afford will exert pressure on their children, such as spending on extra tuition and books, for better examination results.

There are always controversies as to how inputs affect educational outputs. Economists normally would summarize this relationship in the form of a "production function". By using the education production function, we will relate examination results to inputs in the sample as specified below:

$$\text{Log } PMR_i = \alpha_i + \beta_1 UR_i + \beta_2 MF_i + \beta_3 BN_i + \beta_4 PE_i + \beta_5 \log PY_i + \beta_6 \log X_i + \varepsilon_i$$

where

PMR_i = average *i*th student's examination results from five subjects in PMR (Mathematics, Science, English, Malay and History) with grade A = 5, B = 4, C = 3, D = 2 and E = 1;

UR_i = 1 if the *i*th student is from an urban school and 0 otherwise (rural school);
MF_i = 1 if the *i*th student is male and 0 otherwise (female);
BN_i = 1 if the *i*th student is bumiputera and 0 otherwise (non-bumiputera);
PE_i = parent's educational attainment (the higher level between father and mother): 6 (degree), 5 (STPM/Diploma, 4 (Upper secondary), 3 (Lower secondary, 2 (Primary) and 1 (never went to school);
PY_i = Parental monthly income (combination of father's and mother's income);
X_i = Total schooling expenditure for *i*th student per year. Student expenditure can be divided into two: T = expenditure on tuition (including extra books other than compulsory text books), and NT = expenditure on other than tuition;
ε_i = unmeasured factors influencing student performance.

The regression model was estimated by ordinary least squares technique. It was applied to a total of 1,742 observations. We have presented the results of four estimated equations in Table 5.

As these results show, the dummy variable UR has a very significant effect on student performance. In other words, as generally expected, urban students tend to perform better than rural students. However, the estimated coefficient of the dummy variable MF is marginally significant; that is, its effect on student performance tend to indicate that female students on average perform slightly better than male students, but its overall effect is not strong. Quite contrary to most expectations, the insignificance of BN dummy means that there is no difference in PMR performance between Bumiputera and others (non-Bumiputera) students.

The results in general show the strong effects of total schooling expenditure on student performance. Positive coefficient on the log of total schooling expenditure (0.205, t = 12.2) in equation 1 supports the findings that schooling children who benefit from higher educational expenditure tend to achieve higher examination results, holding the other factors that influence student achievement constant. Interpreted in the usual fashion, the slope coefficient of 0.205 suggests that if the total schooling expenditure increases by one per cent, the student grade point (on 5-point scale) would on the average increase by 0.2 per cent. If we were to break up total schooling expenditure into expenditure on tuition (including extra reading materials) and "others", we found in equations 2 to 4 that the log of expenditure on tuitions has a positive and significant relation with log PMR exam results (the coefficients being more than 0.09 and t > 13). The influence of (log) tuition expenditure on student achievement is stronger than (log) "other" expenditure.

Table 5: Regressions for PMR Results

Explanatory Variables	Equation 1	Equation 2	Equation 3	Equation 4
UR (Urban-Rural)	0.125 (13.45)*	0.125 (13.74)*	0.012 (13.44)*	0.119 (13.06)*
MF (Male-Female)	-0.027 (-3.16)*	-0.017 (-2.01)*	-0.014 (-1.72)***	-0.018 (-2.13)**
BN (Bumiputera-Others)	0.0162 (1.46)	0.009 (1.30)	0.021 (3.05)*	0.011 (1.58)
Log X (Expenditure)	0.205 (12.20)*			
Log T (Tuition+Books)		0.095 (14.12)*	0.095 (14.11)*	0.091 (13.66)*
Log NT (Non-Tuition)		0.086 (4.90)*	0.078 (4.41)*	0.065 (3.71)*
PE (Parent's Education)	0.028 (7.15)	0.037 (10.75)*	0.027 (7.07)*	
Log PY (Parental Income)	0.076 (5.68)	0.119 (10.03)*	0.078 (5.96)*	
R squared	0.340	0.358	0.352	0.370
R-bar squared	0.338	0.355	0.350	0.368
F-statistic	149.193	160.899	157.242	145.724
SE	0.17079	0.16856	0.16925	0.16691

Notes: The dependent variable is the average score of five PMR subjects (Mathematics, Science, English, Malay and History). Each equation has a different constant term (not reported). Values of t-statistics are shown in parentheses. *, ** and *** refer to statistical significance at 1%, 5% and 10% levels.

Source: Computed from authors' survey (2008).

In equations 2 to 4, the log of expenditure on "others" was also found to have a positive and significant relationship with student performance but with coefficients less than 0.09 and t-value less than 5.

The results also suggest that higher schooling expenditure by parents was positively related to parental income, where the correlation coefficient (r) between total expenditure and parental income was estimated to be 0.34. The general pattern is that socioeconomic factors (in the sense of better educated and higher income families) enhance educational outcomes. We found that both the level of parents' education and (log) parental income enter

significantly at a 1% confidence level to explain the PMR examination results. However, the role of mothers – as represented by two variables, dummy input (working mothers) and education status of mothers – the results of which are not reported, turns out to be not significantly related to student performance.

6. Conclusions

This research into schooling cost in secondary national schools, both in urban and rural areas, promises some payoffs. In policy dimensions, the results do generally conform to what was generally expected (Lee and Barro, 1997):

(1) Parents with higher socioeconomic status, as reflected by higher income and educational attainment, tend to spend more on their children's education.
(2) Sufficient expenditure on education, particular on extra tuition and books, matters as it would likely produce students with better educational outcomes.

The hypothesis that poverty in rural areas is invariably linked to lower student achievement does seem to be supported by the data. On the other hand, ethnicity and gender do not play any significant role in student examination performance.

The evidence underscores the importance of spreading the availability of schooling and learning facilities to all, supporting the evidence found on female students in Kling *et al*. (2007). The evidence in this paper is more universal as it applies to both female and male students whereas the results in Kling *et al*. (2007) showed a negative effect on male students' education performance. Providing sufficient financial assistance such as subsidies and scholarships for poor students should continue to be very high on policy agenda. Another aspect that deserves an in-depth study is the role of extra tuition by subject in influencing the performance of students according to subject. If a policy simply enables all students to stay in school but lacks accessibility, equity and the capacity to strengthen the delivery system, poorer students will only get the returns associated with years of schooling and not with quality. Thus, their rate of return on their investment in schooling will not be as high as the richer students. This will not help to reduce the performance gap between the haves and have-nots or between rural and urban students.

Notes

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1. In addition, there are very few private international schools, but Malaysians are specially excluded except under very unusual circumstances requiring ministerial permission.
2. For example, the increase in school fees and school bus fares has caused a stir among Malaysian parents and became front page news (*New Straits Times*, 10 June 2008).

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