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Discussion Paper 8/19

Behind the Blackboard: How basic indicators mask gaps in quality of education

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This discussion paper was prepared by Tan Kar Man, Alyssa Chua Lee-Yen, Alia Muhammad Radzi, and Rachel Gong. The authors are grateful for the valuable comments from an anonymous reviewer. The views and opinions expressed in this article are those of the authors and may not reflect the official views of KRI.

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ABSTRACT

This paper seeks to understand why Malaysia's improving performance in basic education indicators does not translate into good performance outcomes in the international TIMSS assessment. We begin by briefly describing Malaysia's performance in the TIMSS assessment over the years and across the Asia Pacific region. We find that Malaysia's performance has deteriorated from 1999 until 2011, and only improved slightly in 2015. Compared to other countries, Malaysia consistently does worse. This could be due to the quality of teaching and the level of parental involvement in Malaysia. While there are enough teachers in Malaysia, they spend relatively little time in the classroom per day teaching and are not sufficiently equipped with the skills to effectively deliver mathematics and science content. Additionally, while parents are generally committed to spending appropriately on their children's education, their direct involvement, for example, helping with their child's homework is limited. This is further exacerbated by the proliferation of tutoring, which creates a disincentive for teachers to teach effectively during formal hours and restricts social mobility since only better-off households can afford better quality tutors.

1. INTRODUCTION

Education is a pivotal component in building human capital[1] — Malaysia's most important asset in its transformation into a developed economy. Common education indicators such as mean years of education (which increased from 9.0 years in 1999 to 11.2 years in 2015), adult literacy rates (which increased from 88.0% in 1999 to 95.3% in 2015) and net enrolment rate (as seen in Figure 1) suggest that Malaysian students should be well-equipped to rival the performance of the world's top competitors in education and future outcomes in life. However, in investigating international assessments in education, the optimistic numbers in these indicators do not translate into concrete results in test performance.

The paper begins with a literature review of the relationship between human capital and economic growth, and why education indicators are used as a measure of human capital. Next we turn to an analysis of education indicators in Malaysia and what they tell us about the educational landscape of the country and the test performances of students. We offer possible explanations for the underwhelming TIMSS scores of Malaysian students, namely that teachers may not be sufficiently equipped to teach science and mathematics effectively and that parents may lack sufficient direct involvement in their children's education. We suggest that the detrimental effects of these potential explanations may be exacerbated by the widespread phenomenon of tutoring. Finally, we suggest next steps that may shed more light on why Malaysian students are not performing as well as might be expected.

2. LITERATURE REVIEW

Extensive research has been conducted on the relationship between human capital and economic growth. Human capital refers to the collective skills and abilities of a given population and it impacts economic growth through its effect on productivity. While this relationship is clear in theory, deciding upon an indicator of human capital is challenging in practice. This is because the resulting effect on economic growth varies depending on which indicator of human capital is used[2].

In investigating the stock of human capital in empirical growth research, a common denominator between the different measurements is that they are based on indicators of education. Popular measurements of human capital include school attainment, school enrollment ratios, adult literacy rates, average years of schooling and school quality. Nevertheless, despite the common theme of these indicators, the data presented for each measurement are inherently different and, thus, produce different results when measuring growth. According to Woßmann[3], the use of poor proxies in human capital measurements is mainly due to data availability rather than suitability based on economic theory.

In early literature on the relationship between human capital and growth, adult literacy rates were commonly used as the main indicator for human capital. UNESCO defines literacy as the

[1] (Burgess, 2016)
[2] (Hanushek, 2013)
[3] (Woßmann, 2003)

percentage of the population aged 15 years and above able to read and write with understanding of a short simple statement on his/her everyday life. Azariadis and Drazen[4] use literacy among individuals over ten years old as a proxy for the median amount of human investment. The authors then compounded annual growth by creating a GNP-to-literacy ratio. However, the authors concede that adult literacy is not a sufficient measurement for growth rate variations within high-income countries, whose literacy rates are consistently between 98 to 100 percent. Adult literacy constitutes one of the most basic skills required to be successful in the workforce and cannot lead to a meaningful conclusion on the development of human capital. The authors also observed that measuring literacy was only an effective indicator when considering primary-level education. Instead, depending on data availability, information on higher level education attainment would be preferable. Another criticism is that the definition of literacy does not consider fluency in numeracy or scientific and technical knowledge, thus implying that these investments do not contribute towards the labour force[5] (Woßmann, 2003).

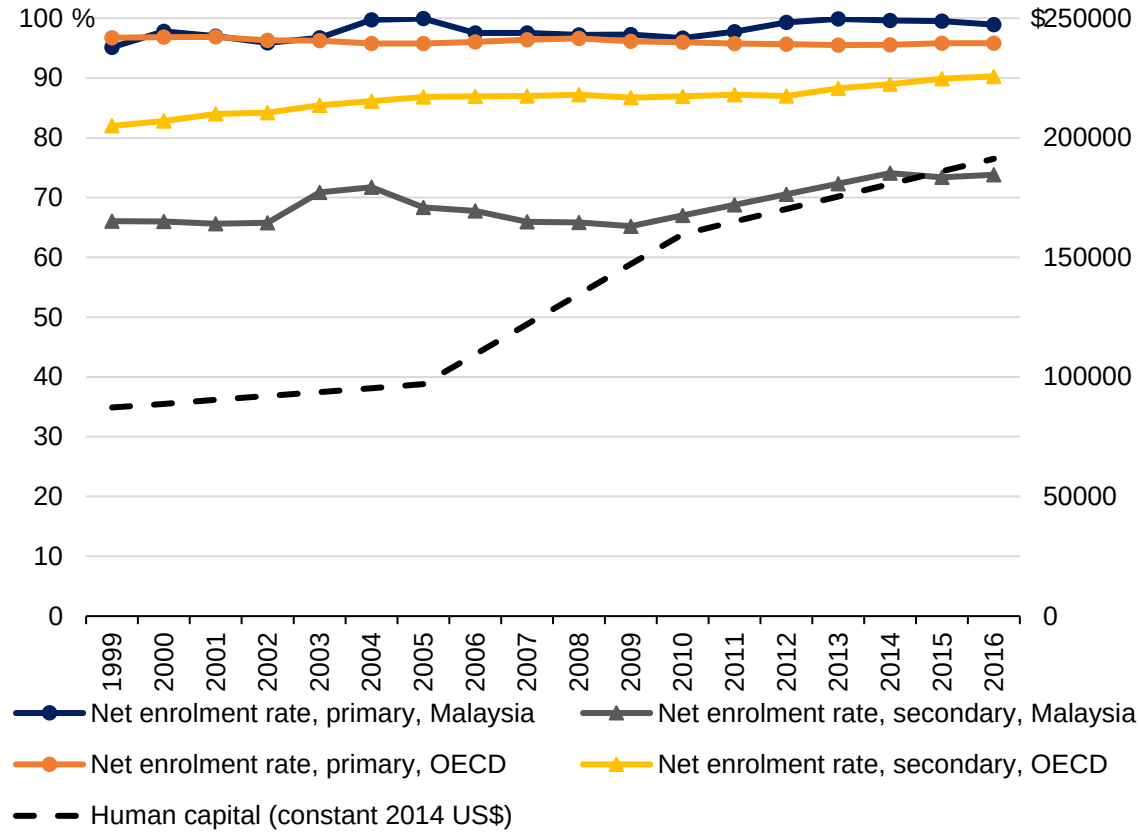
School enrolment ratio is defined by UNICEF as the number of children enrolled in a level (primary or secondary), regardless of age, divided by the population of the age group that officially corresponds to the same level. Barro[6] (1991) examines the correlation between the growth rate of real per capita GDP and initial human capital, measured by annual school enrolment ratios. However, the authors note that primary school enrolment rate proxies for an initial stock of human capital rather than for flow of investment. This is because enrolment ratios are flow variables, in that currently enrolled students cannot be used in production, as they are not yet part of the workforce. Woßmann (2003) sums up three key critiques regarding school enrolment ratios, the first being that it is more accurately a measure of human capital for the labour force of the future, and not for that in the current period. Secondly, current enrolment is susceptible to changes due to grade repetition and dropouts, and it is also not guaranteed that certain graduates will participate in the workforce at all. Net investment flows would additionally need to account for the displacement of workers from the labour force in the relevant year, making enrolment ratios an overall inaccurate representation in human capital stock. Nevertheless, Barro (1991) maintains that enrolment rates are a comparatively better variable than literacy rates, in that enrolment rates are relatively more accurate and more consistent cross-sectionally than the latter.

While the above indicators do provide insight into the educational landscape of different countries, they do not capture the quality of education provided in schools. International assessments such as the TIMSS (Trends in International Mathematics and Science Study) and PISA (Program for International Student Assessment) can provide international comparisons based on student outcomes in Mathematics, Science and Reading. The PISA assesses 15-year-olds across the world regardless of their level of education while the TIMSS assesses students with 8 years of formal education (Form 2 in Malaysia). In 2015, 9,726 students from 207 schools in Malaysia participated in the TIMSS. Additionally, 652 teachers were surveyed.

[4] (Azariadis & Drazen, 1990)
[5] (Woßmann, 2003)
[6] (Barro, 1991)

3. SNAPSHOT OF EDUCATION IN MALAYSIA

Figure 1: Education landscape in Malaysia

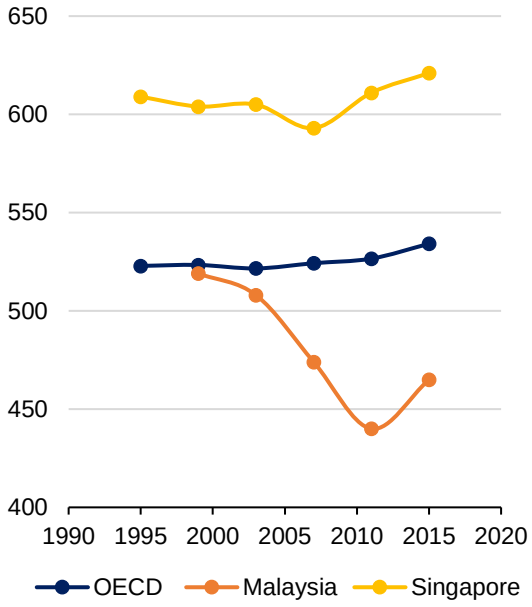


Source: World Bank (1999-2015)

Since 1999, almost every child in Malaysia has received primary education (UNESCO, 2015). Similarly, a satisfactory enrolment rate in secondary education is seen in Malaysia, with evidence of an upward trajectory. However, a net enrolment rate of 73.4% in 2016 still falls far behind that of OECD countries, which have an average net enrolment rate of 89.9%. The growth of human capital[7] in Malaysia (an impressive increase of 123% from 1995 to 2014) conceals the fact that there are underlying deficiencies in the quality of education in Malaysia overall. Thus, it is paramount to recognize the futility of merely increasing the quantity of education available to Malaysians, and instead consider the quality of education that Malaysians are receiving.

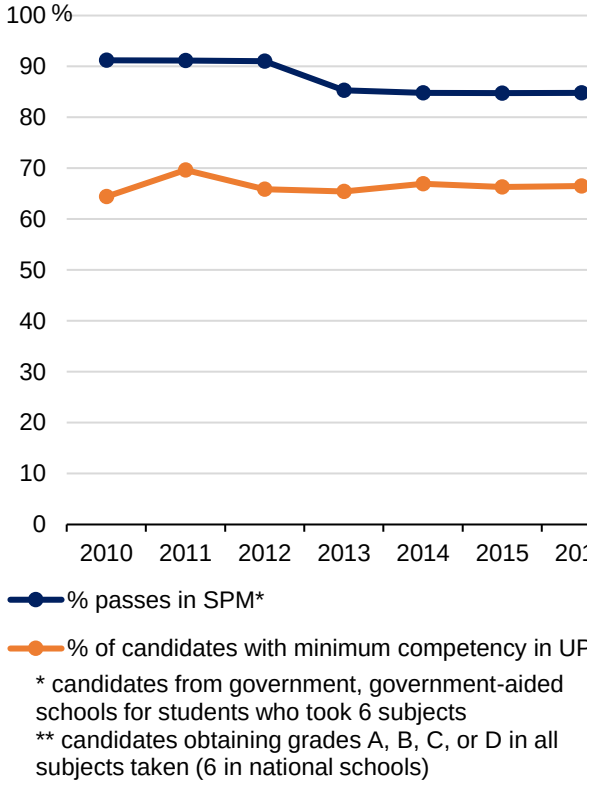
[7] Human capital measures the collective skills and abilities of a population by calculating the net present value of future earnings, and is a function of educational outcomes and health. Source: Lange, Wodon and Carey (2018).

Figure 2: Average TIMSS score



Source: TIMSS (2015)

Figure 3: Performance in national examinations



Source: Education Planning & Research Dept. (2010-2016)

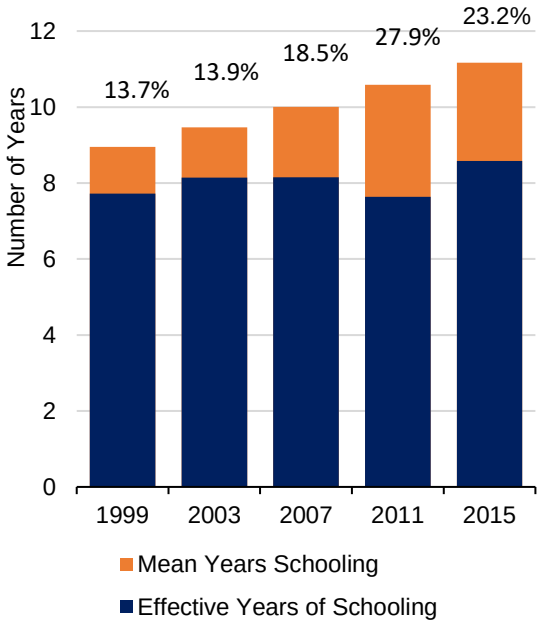
Underlying cracks behind this optimistic outlook manifest as further education indicators are analysed. Malaysia has not fared well in international assessments such as the TIMSS assessment. When Malaysia first participated in the TIMSS in 1999, it did comparatively well, almost matching OECD scores. In fact, Malaysia ranked as one of the top ten mathematics performers in 2003[8]. Unfortunately, this was followed by a downward trend whilst Singapore has consistently done well and improved throughout the years. Malaysia's worst performance was in 2011 with an average of 440 across the Mathematics and Science components of the 8th grade TIMSS assessment.

Following this, a new curriculum was implemented at the primary level in 2011 and the existing mathematics and science curricula at the secondary level were revised and put in effect in 2017[9]. This preceded a slight improvement in 2015, with the average score increasing slightly to 465. These results are in contrast with the results of national examinations (UPSR and SPM[10]) where the percentage of passes in SPM declined from 91.0% in 2012 to 85.3% in 2013 and then remained stagnant until 2015. However, it is important to note that the improvement in the TIMMS assessment could be due to the over-sampling of Residential and Private Schools, where selection

[8] (National Center for Education Statistics, 2003)
[9] (Mullis, et al., 2015)
[10] The UPSR (Ujian Pencapaian Sekolah Rendah) is a nation-wide examination taken by Malaysian students at the end of primary education, after six years in primary school. The SPM (Sijil Pelajaran Malaysia) is a nation-wide examination taken by Malaysian students at the end of secondary education, after 5 years in secondary school.

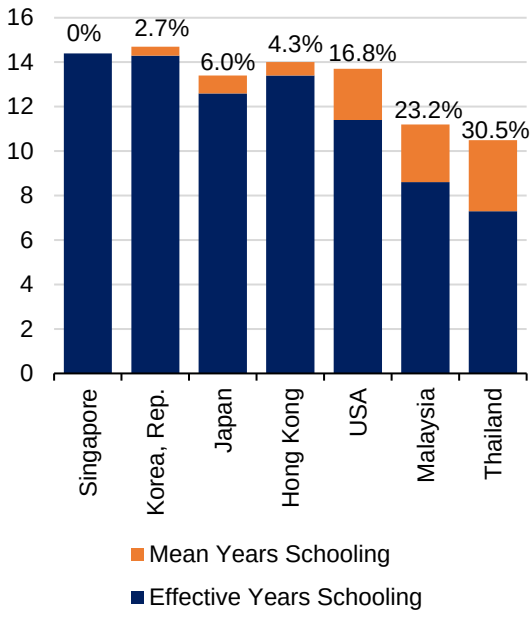
bias exists. Higher performing students self-select into these schools while the majority of Malaysians attend Sekolah Menengah Kebangsaan (public high schools).

Figure 4a: Effective years of schooling



Source: Barro and Lee (2016), TIMSS (2015)

Figure 4b: Effective years of schooling region

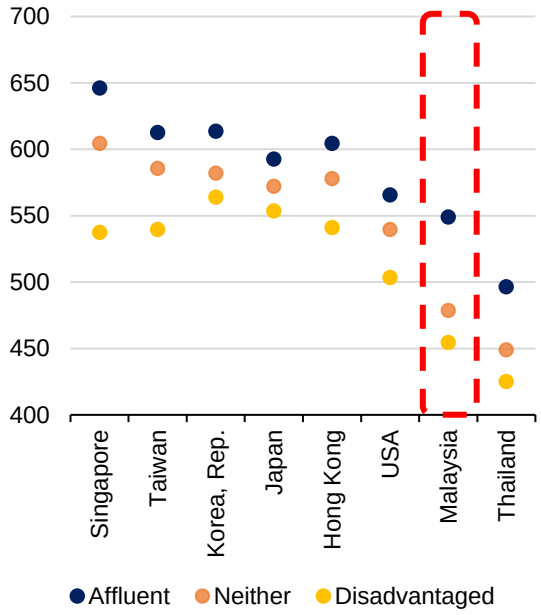


Source: World Bank (2018)

Schooling experience in Malaysia is also less effective[11] compared to Singapore. Singapore was chosen as the benchmark due to it being the top performer in the TIMSS assessment in 2015. We assume that Singapore has the most efficient education system. We reason that if Malaysia's education were as efficient as Singapore's, the same years of schooling would yield the same level of performance in TIMSS while more time spent in school would lead to Malaysia performing better. But, based on Malaysia's TIMSS performance, we find that while mean years of schooling in Malaysia has increased, the effective years of schooling has remained somewhat stagnant. For instance, in 2015, the mean years of schooling for Malaysian students was 11.2 years, but only about 8.6 years were effective, meaning 2.6 years were wasted. Most Asian countries which conducted the assessment outperformed Malaysia significantly, at most wasting 6% of time in school.

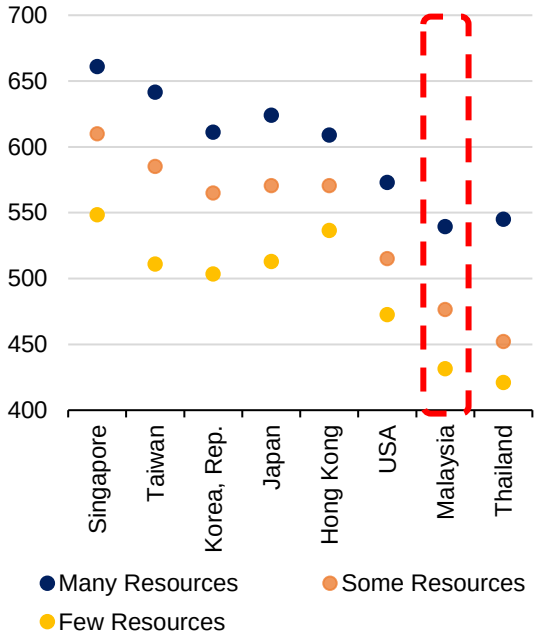
[11] Effective years of schooling is calculated by multiplying the ratio of Malaysia's average TIMSS score to Singapore's average TIMSS score and multiplying it by the mean years of schooling.

Figure 5: Average TIMSS score 8th grade



Source: TIMSS (2015)

Figure 6: Average TIMSS score 8th grade



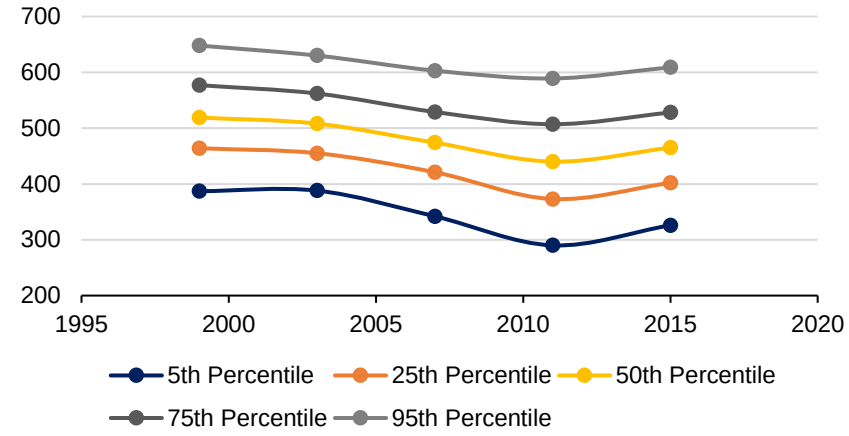
Source: TIMSS (2015)

Examining the TIMSS scores in detail reveals that students with more resources or students who attend affluent schools do better within each country[12]. Students attending affluent schools in Malaysia score 549 on average, compared to an average score of 478.5 from students from schools which are neither affluent or disadvantaged, and 454.5 from students in disadvantaged schools.

The gap between the scores of students who attended affluent schools and disadvantaged schools is rather large in Malaysia at a 94.5 point difference. The only country where the gap exceeds that of Malaysia is Singapore with a 108.5 point difference. Students in Malaysia with many resources on average score 539.5, while those with some resources score 476.5 and those with few resources score 431.5. The score gap between students who have many resources at home and those with few, while worrying at 108 points, is not as large as other countries. The gap in Singapore is 112.5, in Japan 111 and in Taiwan 130.5. Nonetheless, this shows that there is significant inequality within Malaysia. Reducing inequality might lead to improved performance in the TIMSS assessment. While reducing intra-country differences is important, it is necessary to think about inter-country differences. Even the most advantaged students in Malaysia, i.e. the students with many resources or those who attended affluent schools, performed worse than the worst-off students in Singapore, i.e. those with few resources or who attended disadvantaged schools.

[12] TIMSS & PIRLS International Study Center (2015) defines "many resources" as having with over 100 books at home, internet connection, their own room and a parent who has completed university. A student with "few resources" has less than 25 books, no internet connection nor their own room and neither parent had an education above the upper secondary level. An "affluent" school has over 25% of its student body from economically affluent homes, and less than 25% from disadvantaged homes. "Disadvantaged" schools have over 25% of its students from disadvantaged backgrounds, and less than 25% affluent.

Figure 7: TIMSS scores by percentile



Source: TIMSS (2015)

The scores broken down by percentile concur with the previous argument about inequality. The scores for top performing students over the years have stagnated although it remains above the performance of the average OECD student. It is telling that the gap between the 95th percentile and the 5th percentile has not converged over the years and has even widened a little. Improving equity in quality of education so that the gap between the top and bottom performers narrow could boost Malaysia's overall performance.

Hence, we need to re-examine the building blocks that make up the landscape of education in Malaysia to better understand why students underperform. The Malaysia Education Blueprint 2013 – 2025 suggests three possible reasons for this situation: insufficient coverage of topics tested in TIMSS, a language barrier, and the sampling approach, but quickly refutes these reasons. First, while there has been a divergence between the mathematics content in Malaysian schools and TIMSS topics, there has been a convergence in the science content, so this did not explain the drop in scores from 2003 to 2011. Second, language is not an issue either, since the TIMSS test was available in both Bahasa Malaysia and English. Furthermore, there was no noticeable difference between the scores of students who spoke the language at home and those who did not.

In 2015, schools where over 90% of students' native language is the test language scored 469 in mathematics and 485 in science. Schools where less than 50% of students' native language is the test language scored 464 in mathematics and 451 in sicence. One possible explanation for why mathematics scores vary less than science scores (5 points versus 34 points) is that mathematics requires less language nuance than science. The third reason that was suggested was that the sample of 207 schools and 9726 students selected was not nationally representative[13]. Ministry of Education fully residential schools might have been oversampled[14] – about a quarter of schools

[13] Very small schools (schools with less than 15 students), special needs schools, schools which do not follow the national curriculum were excluded. Out of the 207 schools, 53 were MOE fully residential schools. TIMSS believes that this is an oversampling of MOE fully residential schools (Chapter 5 Methods and Procedures). Source: TIMSS (2015).

[14] (TIMSS & PIRLS International Study Center, 2015)

sampled were MOE fully residential schools) – but the Ministry of Education[15] does not see this as an issue, as fully residential schools tend to have high performers.

Instead, we suggest that some of these underlying issues might be traced back to the quality of teaching in Malaysia and the extent of direct parental involvement in their children's education.

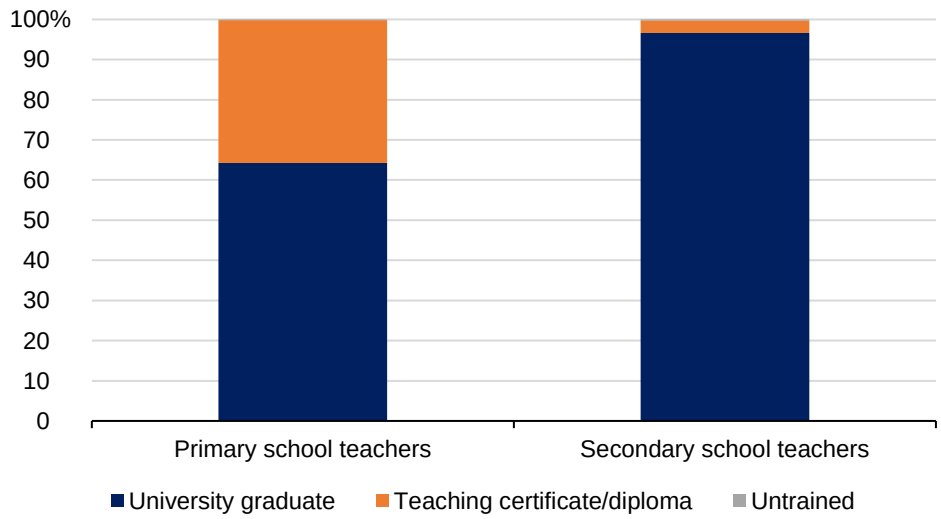
4. QUALITY OF TEACHING IN MALAYSIA

Table 1: Percentage of graduates by field of study

Field of study	2015	2016
Education	15.6	14.2
Arts & Humanities	6.3	5.1
Social Sciences, Journalism & Information	11.6	13.1
Business, Administration & Law	20.1	17.4
Natural Sciences, Mathematics & Statistics	4.8	6.5
Information & Communication Technologies	4.0	3.7
Engineering, Manufacturing & Construction	18.3	23.5
Agriculture, Forestry, Fisheries & Agriculture	1.1	1.6
Health & Welfare	7.3	6.4
Services	4.7	5.3
Unspecified	6.2	3.2

Source: UNESCO (2018)

Figure 8: Percentage of teachers by qualification levels



Source: Ministry of Education (2017)

[15] (Ministry of Education Malaysia, 2013)

About 65% of primary school teachers are equipped with at least a Bachelor's degree, while over 95% of secondary school teachers have at least a Bachelor's degree, far outnumbering the remainder with teaching certificates or diplomas. Fourteen point two percent of Malaysian tertiary graduates studied Education in 2016, making it the third most popular field of study. The popularity of education as a major implies that there are enough graduates equipped to teach in Malaysia. However, certain subjects tend to have more available positions than teachers, while others experience an oversupply[16]. Teachers undergoing pre-service training specialize in an "option" i.e. a subject but often are required to teach subjects other than that "option".

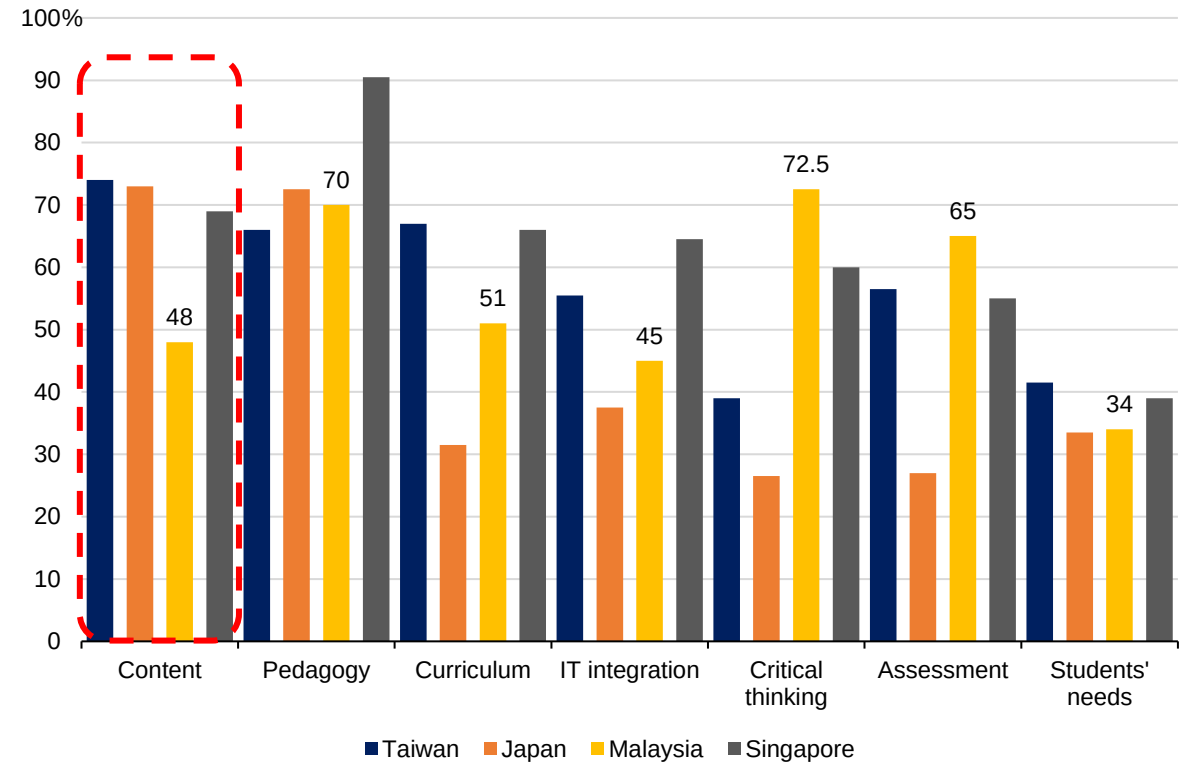
Furthermore, in 2011, the average teacher in Malaysia spends less than 3 hours per day teaching compared to around 4 hours in OECD countries. The rest of the teacher's time is spent on administrative tasks including running co-curricular activities and engaging with the community[17]. According to the TIMSS 2015 survey, over 64.5% of students were taught by teachers facing some challenges[18] while 33.5% of students in Malaysia were taught by teachers with few challenges. While data on the specific types of challenges faced by teachers are unavailable, it seems reasonable to expect administrative duties to come up often as a major concern.

Education graduates are further required to undergo teacher-training courses prior to assuming their teaching positions in schools. Following the implementation of the Economic Transformation Program in 2010, public as well as private teacher training institutions can administer pre-service and in-service training for primary and secondary school teachers. This policy has helped make teacher training more available, with the percentage of trained secondary teachers reaching a high 98.3% in 2018[19]. However, there appears to be no standardized framework in place, as private providers have the flexibility of determining their respective focus areas and business models[20]. Additionally, pre-service training programs in Malaysia fall short on practical requirements: around 20 credit hours are dedicated to practicums compared to at least 40 credit hours in OECD countries. The Malaysian Education Blueprint finds from a survey done by the Higher Education Leadership Academy (AKEPT) that only 12% of lessons were delivered at a high standard in 2011. The problem was that lessons were delivered in a very passive manner.

Malaysia's poor performance in education assessments at an international level can hardly be attributed to a lack of teachers, but rather the activities teachers conduct to produce high-calibre students. As such, the issue at hand is not the lack of teachers, but the lack of quality execution. Thus, one policy recommendation would be to increase the quality of teacher-training.

[16] (Ministry of Education Malaysia, 2013)
[17] (Ministry of Education Malaysia, 2013)
[18] Based on answers to 8 questions dealing with the size of the class, the content of classes, number of teaching hours, time allocated to prepare for classes, addressing individual student needs, pressure from parents, keeping up with the curriculum and administrative tasks. Responses are then scored and scaled. Source: TIMSS & PIRLS International Study Center (2015).
[19] (Education Planning and Research Division, 2018)
[20] (Vethamani, 2011)

Figure 9: Percentage of students by teachers' professional development



Source: TIMSS (2015)

Over 90% of Malaysian teachers spend about 10 days a year on professional development[21], but the percentage of students taught by teachers who underwent training in mathematics and science content in Malaysia is still a lot lower than the high performing countries in the TIMSS assessment. According to Shulman[22] and Haycock[23], teachers' knowledge in content, pedagogy and curriculum is positively correlated with higher student achievements.

The World Development Report 2018 emphasizes the importance of specificity within teacher-training programs. Theoretically, teachers who teach math should be trained to teach math content and understand math pedagogy as well as the curriculum. However, figure 9 shows that this is hardly the case. Only 70% of Malaysian students were taught by teachers who underwent training in pedagogy. In Singapore, the highest performing country, about 90% of students were taught by teachers trained in pedagogy. Comparing Malaysian teachers to teachers in top-performing TIMSS countries reveals no clear pattern, with Malaysia both outperforming and falling behind in different areas. Alarmingly, only 47% of Malaysian students have been taught by teachers trained in math content, while only 49% of students were taught by teachers trained in science content.

[21] (Ministry of Education Malaysia, 2013)
[22] (Shulman, 1986)
[23] (Haycock, 1998)

Furthermore, only 33% of math students and 35% of science students had teachers equipped to address their individual needs, for instance, some students may not understand the content as fast as others. It is reasonable to assume that if teachers in Malaysia were trained to address the specific needs of students, they could help low-performing students (those in the 50th percentile and below) catch up to high-performing students. Other top-performing countries like Taiwan and Hong Kong do not seem to have a high percentage of students taught by teachers who underwent the various different types of training, reinforcing the question of the quality of teacher training available rather than the quantity of teachers sent into training.

Additionally, tutoring regularly supplements formal education in Malaysia. Tutoring is often seen as a necessity especially if the formal education system does not complete the content of the syllabus or if students are not getting enough help in school to understand syllabus content[24]. Teachers are able to become private tutors in Malaysia as long as a permit is obtained from the Ministry of Education and the number of hours allotted to tutoring does not exceed 4 hours a week. In fact, teachers are allowed to tutor the same students they teach in a formal setting. Most private tutors in Malaysia are active and former teachers[25]. This may create a disincentive for teachers to maximize the effectiveness of their formal lecture delivery in school classes.

This issue of teacher quality could be addressed through more stringent internal accountability, achievable through one of the World Development Report [26] suggestions — teaching apprenticeships of three to five years, creating a system of identifying effective teachers. This measure proposed that the least effective 7-12% of teachers be removed prior to assuming full-time positions. These raised standards could also boost the respectability of teachers, adding value to the profession and removing the stigma associated with teaching as a fall-back option.

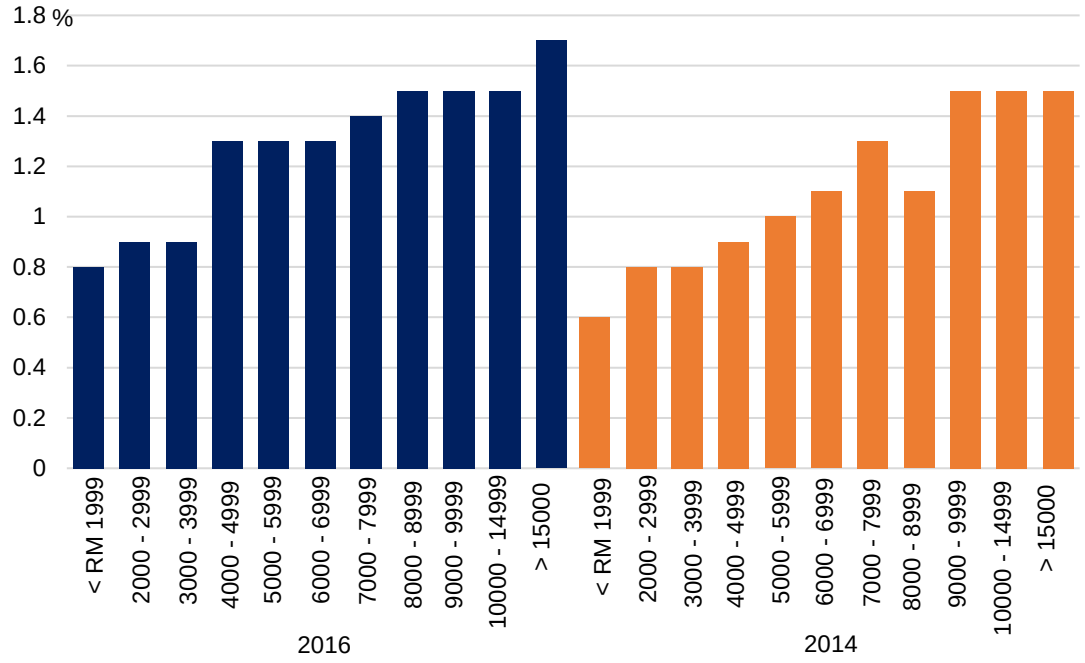
5. PARENTAL INVOLVEMENT IN CHILDREN'S EDUCATION

Another factor that may be responsible for the subpar academic achievement is limited direct parental involvement in education. Larocque et. al.[27], Hill and Craft[28] and Hara and Burke[29] find that parental involvement is positively correlated with educational outcomes. The level of parental involvement is often dependent on socioeconomic background. High income households are able and more likely to spend more on quality education. This matters in countries where schools differ significantly in quality, with better schools charging fees that may not be accessible to low income households. Furthermore, high income households are able to register their children for tuition classes, have higher bargaining power when cooperating with teachers, schools and communities, and can ensure that there are sufficient educational resources at home. Low parental involvement coupled with the inequality of school standards throughout Malaysia can lead to low social

[24] (Kenayathulla, 2013)
[25] (Kenayathulla, 2015)
[26] (World Bank, 2018)
[27] (Larocque, et al., 2011)
[28] (Hill & Craft, 2003)
[29] (Hara & Burke, 1998)

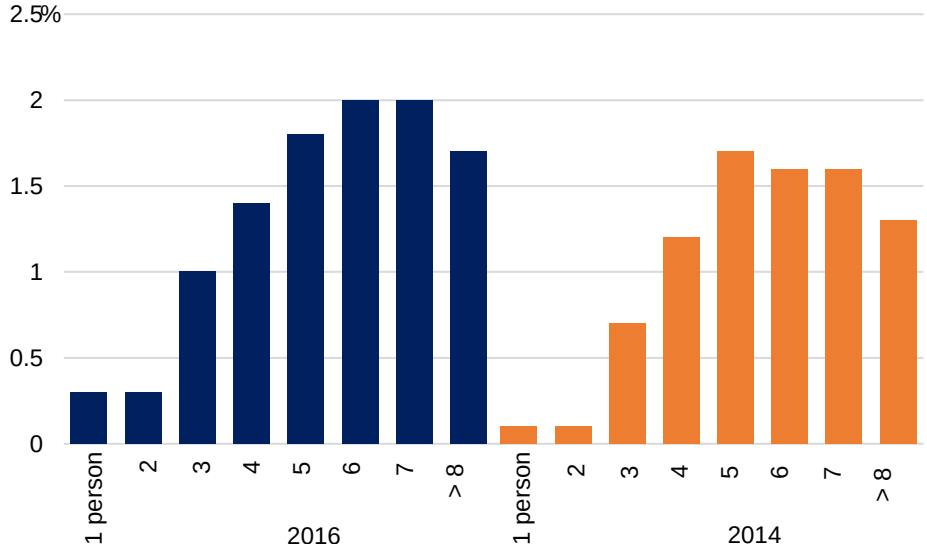
mobility. From the Household Expenditure Survey, we are able to see the amount of money or percentage of income spent on education[30] by the various types of households.

Figure 10: Percentage of household expenditure on education by income class



Source: Household Expenditure Survey (2016 & 2014)

Figure 11: Percentage of household expenditure on education by size of household



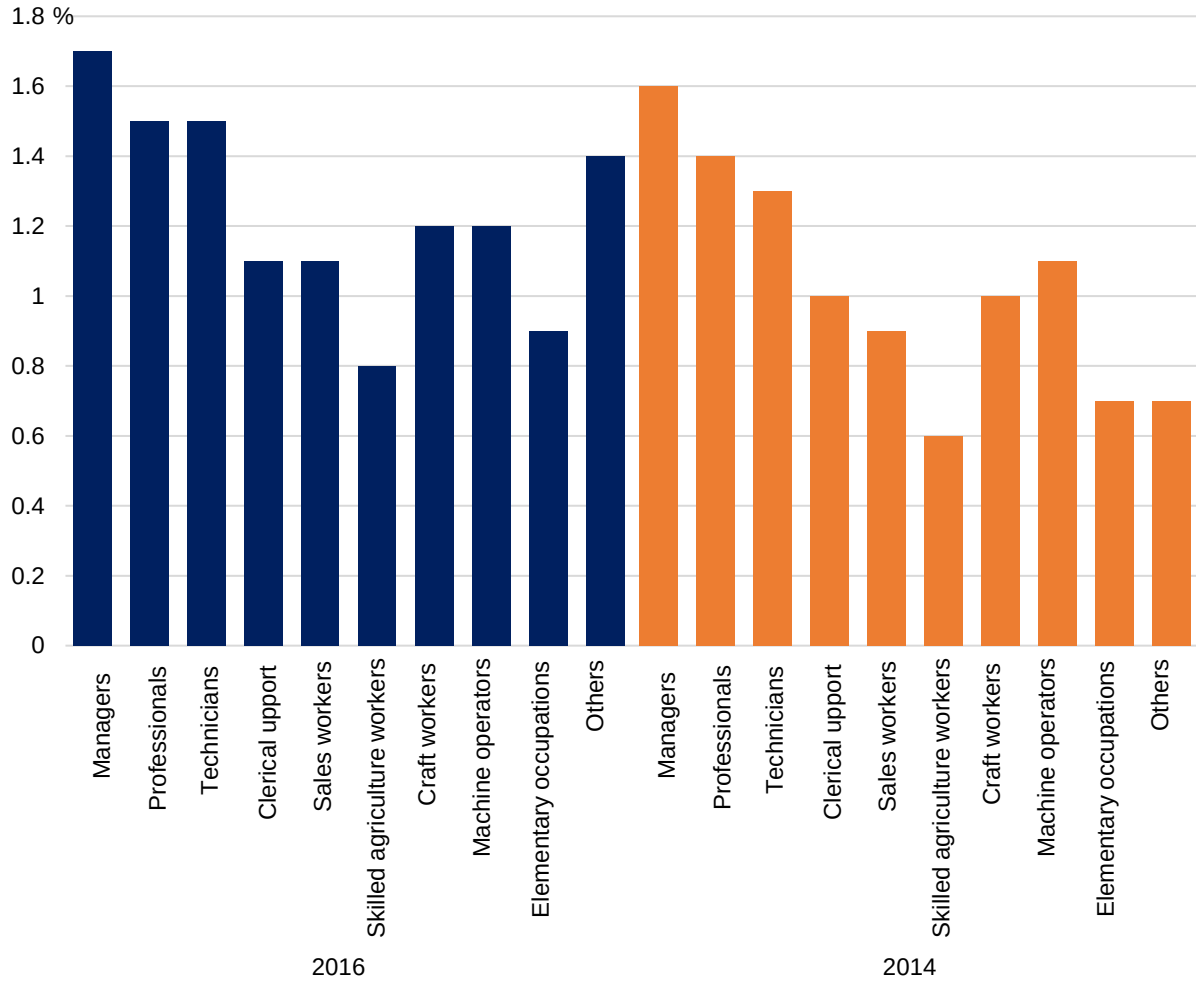
Source: Household Expenditure Survey (2016 & 2014)

Low income households are often disadvantaged since they are unable to provide as many resources to their children. Figure 10 confirms that spending on education as a proportion of

[30] Spending on pre-primary, primary, secondary, tertiary education and education not defined elsewhere.

income increases as household income increases. In 2016, households earning less than RM 1999 a month spent 0.8% of their income on education, while households earning over RM 15000 a month spent 1.7% of their income on education. In absolute terms, the amount spent on education varies greatly between the different income classes, with households earning less than RM 1999 a month spending RM 11 a month on education, while households earning more than RM 15000 spend RM 182. This difference could also be influenced by the size of the household. Households with more children can be expected to spend a greater portion of their income on education. Figure 11 shows that households with 6 to 7 members spend the greatest proportion of their income on education at about RM 79 to 91 a month (approximately 4 to 5 children), while households with 7 members spend the greatest absolute amount.

Figure 12: Percentage of household expenditure on education by occupation of head of household



Source: Household Expenditure Survey (2016 & 2014)

Households with managers as the head of household devote the greatest share of their expenditure to education. Since managers earn the highest wages out of all the occupations, this means they spend the greatest absolute amount on education too at RM 131 per month. Households with technicians and professionals as the head also have a greater share of expenditure devoted to education than other occupations, while skilled agricultural, forestry and fishery workers have the smallest share of expenditure dedicated to education. Households headed by people in skilled

agricultural, forestry and fishery and elementary occupations spent the least on education at RM 22 a month.

Another factor linked to parental involvement which may prevent social mobility is the proliferation of tutoring. A survey by Kenayathulla[31] found that 93% of households sampled allocated about 10%[32] of monthly expenditure on tutoring. Private tuition can take various forms, from being "commercially organized" into tuition centers, lecture-style in formal schools, informal groups or one-on-one tutorials. The quality of tuition varies within each form. This allows high income households to splurge on "famous" or better tuition teachers, aggravating inequality. In contrast, OECD[33] finds that successful education systems are able to make up for differences in socioeconomic background and ensure that all students master basic skills in reading, mathematics and science. Students from a low income background are often clustered in certain schools, hence allocating more resources to schools where a larger portion of students are from disadvantaged backgrounds could help improve student performance.

Parents can also get involved directly with their children's education by helping with homework, reading or playing educational games. Insufficient data from the TIMSS survey on parental support prevents us from assessing Malaysian parental involvement in children's education. The available information was from the Early Learning Survey which applies to parents whose children took the 4th grade assessment but Malaysia only participated in the 8th grade assessment. The 8th grade student questionnaire touched only on how long students spent on homework daily and whehter the student attended remedial classes. In the teacher questionnaire, a few questions on parental involvement were asked, requiring teachers to rank the degree to which parents were involved in school activities, committed to ensuring that students learn, and setting expectations for learning, as well as their perceptions on maintaining high academic standards[34].

Kandasamy, et al.[35] surveyed a group of teachers in Subang Jaya in 2014 and found that the general consensus is that parents in Malaysia, while ardent about the performance of their children, tend to believe the responsibility of education falls to teachers. In Malaysia, parents are willing to spend amounts necessary to ensure that their children get through school (for example on private tutors) but do not often participate actively at home or with schools. Henderson and Berla[36] and Wilder[37] find that achievement in schools is highly correlated with parental guidance. While it is not completely necessary for parents to know the correct answer to homework questions, simply spending time with their children and discussing school, giving encouragement and being accessible if their children have questions help improve education outcomes[38].

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[31] (Kenayathulla, 2013)
[32] In the Household Expenditure Survey, households spend less than 2% on education. We cannot explain this large discrepancy other than suggesting that Kenayathulla (2013) sampled a unique set of households.
[33] (OECD, 2018)
[34] (TIMSS, 2014)
[35] (Kandasamy, et al., 2016)
[36] (Henderson & Berla, 1994)
[37] (Wilder, 2014)
[38] (Ballen and Moles, 1994; OECD 2018)

If parents spend some time every day after school helping their children with homework, it may reduce the need to rely on tuition teachers who might have a vested interest in not improving the quality of teaching at school. These teachers, in turn, may then become more invested in teaching during formal school hours. Furthermore, increased parental collaboration with schools allows their children's progress to be tracked. Areas in which their child is weak can be targeted for improvement.

6. CONCLUSION

Looking at basic education indicators from 1999 onwards, Malaysia trends upwards in indicators of literacy, enrolment and mean years of schooling. This does not translate into competitive performance in international assessments such as the TIMSS where it falls behind other countries in the region. Part of the reason for this may be attributed to the quality of teaching, where despite an abundant supply of teachers, the effectiveness of content delivery and pedagogy is lacking. Additionally, limited direct parental involvement may prevent children from being motivated to study and perform well. These two issues need to be addressed if Malaysia is to catch up to the top performers. As Malaysia is moving towards advanced economy status, much of the growth will inevitably be driven by innovation, and human capital built on high quality education is the most relevant tool that can contribute to this growth. It is important to recognize that the education system in Malaysia (and many other countries) was designed for industrial economies. Creative thinking needs to be emphasized more so that Malaysia can catch up to the frontier economies.

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