# Malaysia's Post-PISA2012 Direction

Amnah Abdullah and Robert Francis Peters

***Abstract*—The programme for international student assessment (PISA) is a 3-year assessment for students aged 15 and 16 years old on the subject of Mathematics, Science and Reading. Its aim is generally to PISA stands in a tradition of international school studies by the International Association for the evaluation of educational achievement (IEA). The global world has seen the participation of OECD (Organization for Economic Co-operation and Development) member countries and partner countries, and this programme is to stress that what is communicated by the international assessment organizations is just a tip of the iceberg, but participating countries are advised not to overly interpret the PISA results. Malaysia is one of the countries that subscribed to the assessment with a benchmarking of its education system. In the past 2 sessions that Malaysia had participated namely 2009 and 2012, the results were welcomed with mixed reaction. To resolve the mixed reactions of the Malaysian society, the society's perception of PISA, particularly students aged 15 and 16 years old is necessary. A qualitative case study on the stakeholders' concepts behind PISA showed differences. The differences were detected, and the impact of the differences was discussed.**

***Index Terms*—Awareness, education system, ranking.**

## I. Background

As the name suggests, the programme for international student assessment (PISA) is an approach to assess the status of a nation's education system. It is an assessment of a nation's education system by gauging Mathematics literacy, Science literacy and Reading literacy for 15- and 16-year-olds. The design and implementation of PISA was a jointed effort of the Australian Council for Educational Research (ACER), the National Institute for Educational Measurement (CITO) in the Netherlands, Westat and the Education Testing Service (ETS) in the United States, and the National Institute for Educational Policy Research (NIER) in Japan. Implemented for the first time in 2000, the global world saw the participation of Organization for Economic Co-operation and Development (OECD) member countries and partner countries in this global assessment since OECD's mission is to "promote policies that will improve the economic and social well-being of people around the world" [1], [2]. The OECD's participation encouraged other countries to participate in PISA.

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Amnah Abdullah is with the Faculty of Education (Science Education) Universiti Teknologi MARA, Selangor, Malaysia (e-mail: amnahaaa@yahoo.com).

Robert Francis Peters is with the Institute for Tropical Biology and Conservation, Universiti Malaysia Sabah, Sabah, Malaysia (e-mail: rfpeters@ums.edu.my).

Malaysia is a developing nation that envisions its students are to be of international quality. To achieve the vision, Malaysia made many improvements to its education system, and to determine the quality of the Malaysian education system, Malaysia participated in PISA 2009 and PISA 2012. The outcomes of the participants is listed the following tables.

TABLE I: OECD, PISA Results 2009

| | On the overall Reading scale | On the Mathematics scale | On the Science scale |
|---|---|---|---|
| **Mean score in PISA 2009 (OECD average)** | **493** | **496** | **501** |
| Singapore | 526 | 562 | 542 |
| Netherlands | 508 | 526 | 522 |
| United States | 500 | 487 | 502 |
| United Kingdom | 494 | 492 | 514 |
| Malaysia | 414 | 404 | 422 |

Adapted and modified from Source: OECD, PISA 2009 Database.

TABLE II: OECD, PISA Results 2012

| | On the overall Reading scale | On the Mathematics scale | On the Science scale |
|---|---|---|---|
| **Mean score in PISA 2012 (OECD average)** | **496** | **494** | **501** |
| Singapore | 542 | 573 | 551 |
| Netherlands | 511 | 523 | 522 |
| United States | 498 | 481 | 497 |
| United Kingdom | 499 | 494 | 514 |
| Malaysia | 398 | 421 | 420 |

Adapted and modified from Source: OECD 2014

In the 2009 participation, out of 74 participating countries, Malaysia ranked as follows; 57th place in Mathematics with the score of 404; 53rd place in Science with the score of 422; and 55th place in Reading with the score of 414 [3].

In the PISA 2012 results, Mathematics score 421 dropped below OECD's average score of 494, Science mean score 420 dropped below OECD's average score of 501, and Reading mean score 398 dropped below OECD's average score of 496 [4]. Even though some of the Malaysian schools performed above the OECD average, the overall ranking was still below OECD's average [5] thus Malaysia's overall ranking was 52nd place out of 65 participating countries. In comparison to the United States of America (USA) overall ranking 36th and the United Kingdom (UK) overall ranking 26th, the drop in the Malaysian students' achievement was significant enough to suggest a flaw in its education system [5].

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## II. Introduction

Based on mass media, there were as much of praises for PISA as there were for its critics [6]-[8]. Of course, countries are advised not to over-interpret the PISA results [9]. In the two PISA, Malaysia had ranked below the OECD's average, and this had raised concerns among certain groups of people about the quality of the Malaysian education system. Amidst those concerns was the possibility of PISA's vision misinterpretation and misunderstanding as a Malaysian education system benchmark; some stakeholders might have just seen PISA as merely another assessment. Apart from this, whilst some students might have understood what PISA is, they might not understand its benefits.

This direction of study is supported by researchers whom stressed that what is communicated by the international assessment organizations is just a tip of the iceberg [10]. Our notion is that scarce nationwide information affected students' priorities away from the benefits of PISA; very scarce information might have been given with regards to how PISA can affect a country's Education Policy.

This study hopes to bring light of the possibility that PISA information dissemination tools within the Malaysian Education system affected Malaysia's PISA results. Our study examined factors that led to Malaysia's most recent PISA results i.e. the PISA 2012; and with this study, it is hoped that overlooked factors could resolved, and thus signals the possibility of a better rank [5].

## III. Literature Review

Over many decades there has been a need to have a standard that could be used to assess public education system. PISA stands in a tradition of international school studies, undertaken by the International Association for the Evaluation of Educational Achievement (IEA) whose activities started in the 1960s. In PISA, its reading component was inspired by the IEA's Progress in International Reading Literacy Study (PIRLS), but much of its methodology follows the example of the Trends in International Mathematics and Science Study (TIMSS) that started in 1995, which in turn was much influenced by the U.S. National Assessment of Educational Progress (NAEP). Because of historical aspect, apart from PISA and TIMSS, this literature review took into account other education evaluation system, and this included Westat and the Educational Testing Service (ETS) founded in 1947.

When implementing PISA, it has been recommended to a large international institutions database to avoid biasness. This recommendation came after assessment issues emerged in 2009 concerning PIRLS 2001 and PISA 2000 in relation to reading literacy when the assessment concerns cross-language differences for students assessed in different-languages [11]. PISA aims at testing literacy in three competence fields: reading, mathematics, and science on a 1000 point scale. The PISA mathematics literacy test asks students to apply their mathematical knowledge to solve problems set in real-world contexts. To solve the problems students must activate a number of mathematical competencies as well as a broad range of mathematical content knowledge. TIMSS, on the other hand, measures more traditional classroom content such as an understanding of fractions and decimals and the relationship between them (curriculum attainment).

PISA claims to measure the application of education in real-life problems and lifelong learning i.e. workforce knowledge. For example in its reading test, PISA assessment does not look at how well 15-year-old students master grammar or how well students' readings are [12]. Besides this example and from the outcome of PISA 2009, elements of good economic health predictors is the reading literacy skill had been proposed [3]. And yet, U.S. institutions alerted the international community of possible nuanced conclusions due to factors of students' social and economic characteristics which can lead analysts to disaggregate test scores [13].

"In making comparisons between PISA and TIMSS results internationally recognized, PISA results were made to reflect relative performance of countries on a set of desirable mathematical proficiencies for everyday life; the proficiencies guidelines were set through a consensus building process guided by the PISA mathematics expert group. In contrast, TIMSS results only reflect how well countries performed against important areas of current mathematics curricula as agreed by participating countries. Since the two mathematic framework building approaches did not produce the same assessment results, building approaches had become food for thought for both curriculum developers and assessment practitioners" [14].

In Malaysia, PISA had been mistakenly linked to the Malaysian education system. This mistake was due to lack of information about PISA in public domain and due to many structural changes that is occurring in the Malaysian education system. If this mistaken linked continues, there is a possibility that PISA might deter Malaysia from realizing its world class education system.

### *A. The Lack of Information Limited the Malaysian Society from Understanding PISA's Purpose*

Prior to the two important participation of Malaysia in PISA, very few information appeared in the Malaysian mass media. Even fewer information were about the remarks and comments on Malaysia's PISA results. When PISA 2012 was announced, the Malaysian public was caught off-guard because the public could follow the result trend of PISA 2009 and PISA 2012 but had no critical discussions for them to digest. This lack of information cause certain quarters to politicize PISA and misinterpret its purpose. Malaysia might have done well if the enthusiasm to enter any international assessment platform had been shared nationwide.

### *B. Evolving Education System Causes Misunderstanding*

Education evolves. Historically, Malaysia inherited its education system from the British Empire after federalization on the 16th September 1963. Over the years, there had been discussions and actions of replacing the British system with a system that suited the new federation. One example to the change is seen through the national lower secondary student assessment system. Sijil Rendah Pelajaran (SRP) was introduced to replace the British Lower Certificate of

Education (LCE) at the end of the 1960s, which was subsequently replaced with Penilaian Malaysia Rendah (PMR) in 1993. The current assessment system which started in 2013 known as Pentaksiran Tingkatan Tiga or Form three assessment (PT3).

Developing from the National Education Blueprint 2006-2010 to the current National Education Blueprint 2013-2025, Malaysia is aiming top third rankings for international assessments TIMSS and PISA within 15 years. PT3 is a new instrument implemented by Malaysia to replace the previous nationwide assessment Pentaksiran Menengah Rendah (PMR) to assess 15-year-old students. Talks about PMR's change started as early as 2010 when education stakeholders saw the prevailing system was too exam oriented [7]. The factors needed for the change in PMR had long been around. More obvious factors were the introduction of the Malaysia Education Act of 1996, Perbadanan Sumber Manusia Berhad 2001 and the National Skills Development Act of 2006. Along with other governmental instruments, PMR had to be changed to accommodate and support the Malaysian education system's push into an industrialized environment. However, the timing of the PMR's replacement i.e. PT3 information entering into public domain was crucially misplaced; it occurred in 2010, which coincided with the released OECD first report. This coincidence was misinterpreted by the Malaysian public whereby it associated PT3 with PISA in a negative manner more readily than all of the changes that Malaysia has undergone. Thus not taking into account that the policy change was to better future rankings internationally.

## IV. Methodology

There is a need to assess the validity of the notion that PISA would not work for Malaysia in the very near future, and this study presents a qualitative research to fit the need. This research is based on questionnaires prepared to investigate factors, opinions beliefs of Malaysia's OECD below-average worldwide ranking.

Students from randomly chosen public and private schools in Petaling Utama district, Selangor state of Malaysia were interviewed through face-to-face and online means. Four female students and two male students from Form 1-3 or Grade 7-9 participated in this research. The participants are students who have already had experience about PISA or a mock-PISA. The participants were interviewed outside of formal schooling time. To preserve data validity, the data collected are written by the participants themselves or voice-recorded by participants.

The interviewer formulated the questions based on a schema verbally to fit the students' understanding, and there were four key questions. The four questions are as follows:

1) What do you understand by PISA?
2) Why do you think the assessment is focused in Mathematics, Science and Reading?
3) What language would you be comfortable in to understand Mathematics and Science?
4) PISA: what's in it for you?

Considering the majority of the research respondents' background and awareness of PISA, it was necessary to explore the schools' information dissemination system in-depth.

Participants were given pseudonyms for privacy purposes.

## V. Results and Discussions

As generally intended when it was first developed, PISA is a yardstick to determine the quality of a nation's education system. Poor PISA results might suggest the output of a batch of lesser intelligible students as the outcome of a low quality education system. However, poor PISA does not identify the cause of the output to be either large-scale misinterpretations due to the lack of key information or the failure of an education system. This study identified the factors that impacted on Malaysia's implementation of PISA.

Generally, this study found students were strongly oriented towards PT3 as compared to PISA. This orientation was the result of the understanding that PT3 was a compulsory nationwide yearly school-base assessment, while PISA was a non-compulsory and non-yearly government-based assessment. One participant states that the results are not going to be in their report cards. In addition, two participants are not happy because they are not able to get to know whether they did well in a particular question or not because individual results are not discussed in class. With that orientation, this study discovered that students responded by placing more effort on PT3 and very few effort on PISA.

The effort that the students invested in PT3 and PISA is proportionate to the importance of the assessment. Majority of the students interviewed thought PISA is only an education services ranking system; one student participant went further saying that PISA is a "real-life" assessment test, while another stated that PISA equated an IQ and general knowledge test. Hence, the perception that Malaysian students had of PISA was inaccurate.

Malaysian students' inaccurate perception of PISA was compounded by misunderstanding that the teachers had about it. This was uncovered when a public school participant, stated that the school's Head of Science teacher could not provide reasonable explains about the details of PISA. Could this be also an indication of issues in teachers' priorities [8]? More studies might be needed.

Admittedly, all of the researched participants gained nothing from PISA. This single matter becomes a key factor to how students and teachers see PISA. Since PISA was to gauge the education system of a nation, student's admission is acceptable.

In this study, it is clear that students could have been mentally and motivationally prepared to succeed PISA. To get a better PISA ranking, this study suggests Malaysia to establish student motivational programs that could also serve to enhance the students' appreciation of PT3. Among the motivational aspects needed include language preference, subject understanding and humanities.

### A. There Is no Correct Language in PISA, All Language Is Acceptable when Assessing an Education System

All of the students got their early education when English was made the compulsory language for the subject of Science and Mathematics. This background fact alone was the main reason why the choice of language mediums for the respondents was English. All participants prefer their Science and Mathematics subjects to be in English medium instead of Malay. However, because of the English preference, some political bodies had politicized the language aspect of education; they had been vocal about it. The political atmosphere that is now surrounding the choice of language that PISA's students need to be understood and resolved since it would have considerable physiological impact on PISA's students.

### B. Every Subject Has Its Importance, There Should not Be Any Biasness

Mathematics and Science have a dominating reputation among Malaysian students. One participant said that "it was the most important subject in the world." Apart from this, another participant remarked other subjects namely "History and Geography is out because each country has their own History and Geography so you cannot expect other countries to know your own History and Geography". One student added that "Mathematics, Science and Reading are subjects that everyone can relate to." These subjects do not solely determine the quality of an education system to which PISA was designed for. Nevertheless, because it is quite universal, these subjects could be used for comparison, hence its importance in PISA as a comparative tool between different countries. Regardless to the purpose of PISA, every Malaysian students need to understand the importance of all subjects that they learn.

### C. Humanities Call for the Understanding and Appreciation of Every Subjects, It Complements Sciences and Mathematics

The response to the fourth question clearly portraits the government and school's urgency to make PISA important. If a country is to excel in PISA assessment then there should be an effort on all parties to explain what PISA is about nationwide. In the school environment, government should facilitate schools in providing materials to help students review their answers and to know individually whether they did well or not; this involves the motivation aspect of sitting for PISA assessment. Considering the fact that the majority of the respondents in this study pose the researcher to question students' awareness concerning PISA; it is necessary to explore whether schools and teachers are informing students in-depth on this important global assessment.

The general response among respondents is that PISA is important but not necessary. The understanding that an assessment could be deemed important or not important or could be deemed necessary or not necessary is a troubling understanding.

Finland provided an example. But should we take Finland's example as our mentor reverend for their authoritarian, obedient and collectivist mentality [15]?

## VI. Conclusion

Base on this study, researchers can propose that very scarce information is given about PISA in schools nationwide. Very scarce information is given with regards to how PISA can affect a country's Education Policy and hence a change in policy.

As a concluding remark, the Malaysian government envisions Malaysians students are of international quality. This vision also pays tribute to the education system that the country has. However, this vision was not translated onto the society causing the Malaysians to see it merely as another assessment. While students understood what it is, they did not understand its benefits; Malaysia is not alone as other countries face the same scenario about their students [9].

This study took note that although the U.S. is not ranked among the three top position of the ranking but the dollar is the note that is "rocking" the world economy. The statement that needs to be brought forward now is that "Is economy really related to education?" Consider the proposal by PISA that one of its elements of assessment could be good economic health predictors. The PISA results do not give a clear answer to this question when analyzing the ranking in relation to respective economic status [16]-[18]. Important to note that researchers from the United Kingdom questions the usefulness of the survey to schools and educational policy-makers [16], labelling PISA results as misleading [16], [18], [19].The United Kingdom, the United states and The Netherlands had very low participation rates [16].

In the Malaysian scenario, we are deeply concerned like the 80 over academics around the world in their letter to Dr Andreas Schleicher [6], director of the OECD's (Organization for Economic Co-operation and Development) Programme for International Student Assessment, of the "Pisa shock" that is happening in many countries, possibly damaging education worldwide. Some participating countries hoping to improve their ranking are already renovating its education systems; overlooking the short comings in PISA's relevance to developing countries; thus UNESCO with UNICEF will be leading the Post-2015 Global Thematic Consultation on Education which will also touch on the PISA assessment [20]. This study agrees with the 80 over academics that it is not scientifically appropriate to measure educational traditions and culture of extremely diverse global nations with a single yardstick [6]. Rutkowski, Rutkowski and Plucker's proposal of an accessible and inexpensive alternative to OECD for "measuring and comparing educational outcomes at the international and national level … may be creating an assessment with released items from The National Assessment of Educational Progress (NAEP) or TIMSS. This would be a fairly simple endeavor as each of these programs regularly releases operational test questions from past cycles. To that end, the National Center for Educational Statistics (NCES) offers a collection of released TIMSS items for grades 4, 8, and 12 (see

http://nces.ed.gov/TIMSS/educators.asp). Schools may use these items to create their own assessment and then benchmark answers against national and international performance" [2].

This study would like to take into consideration of Malaysia's Asian financial crisis of 1997/1998 and from personal experience of the researcher that Malaysian graduates were well in demand in all industries all over Malaysia [21], just before the Asian financial crisis. These same graduates sat for the same national education system assessment as those of the present graduates. Any graduates goal is a good employment or to start on their own success in life. This study suggest that education system of respective nations should also consider having trust in local knowledge of assessment in their uniqueness and local dynamics as part of implementing policies in education [22].

Students should be made aware that PISA portraits the success or failure of the education system [3], [4], of which should the latter happen a change of policy will be in order. Students' medium of comprehending PISA would be through the teachers, principals and the nations media [15]. Especially relevant is the study done by three respectable scholars in education stating that "PISA can only provide a snapshot of what a single age-group of students knows about a limited set of topics every three years. It is not a comprehensive, longitudinal view of all important aspects of an educational system" [2]. In conclusion, this study strengthens the statement that "globalization is also a local process affecting local people" [2] emphasizing the need to increase aggressive awareness nationwide of Malaysia's aim in participating in the global assessment and what will definitely incur post-assessment. While this study agrees that much is gained when comparing oneself to the rest of the world, this study would like to caution the possibility that one international education survey chosen to provide education policy advice might be using an assessment irrelevant to the nations local schools [2], [9], [16], [18], [22] in relation to the nature of the tasks and items of the assessment [14], hence the need for opinions and advice from other international organization to help countries with their decisions in their education policy.

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**Amnah Abdullah** received her first degree in cell biology and physiology with honors from the Universit éMontpellier II, Montpellier, France and her master of science degree in pharmacy from the School of Pharmaceutical Sciences from the Universiti Sains Malaysia, Penang, Malaysia.

She had been involved in ISO, quality control, and accreditation of Undergraduate Biomedical Science Programme. Currently, she is a PhD student of Universiti Technologi MARA, Malaysia and she is pursuing the study of science education. Her research focuses on the question of how knowledge of and about science is communicated in large-scale assessments.

**Robert Francis Peters** is a member of IACSIT, who received his first degree with honors in biology from the Universiti Kebangsaan Malaysia, and his masters on the subject of environment from the Universiti Malaysia Sabah. He had been involved in the tourism industry for more than 10 years servicing as a licensed tourist guide and a ministry approved tourism trainer. He had also served as the tourism industry human resources expert for the Jabatan Pembangunan Kemahiran for several years before joining the academic world.

In the academic world, he is researcher at the Institute for Tropical Biology and Conservation, University Malaysia Sabah in Malaysia that investigates the mechanism of ecotourism, specifically the interpretation of scientific information into tourism knowledge. Besides ecotourism, he also lectures the subjects of ecology, natural resources economy and biology to undergraduates. Currently, he is a PhD student of Monash University and is pursuing the study of indigenous hospitality as an essence of the communication of indigenous knowledge.