



How to cite this article:

Md-Ali, R., Veloo, A., Shanmugam, S. K. S., Yusoff, Y. J., & Awang-Hashim, R. (2021). The issues and challenges of mathematics teaching and learning in Malaysia orang Asli primary schools from teachers' perspectives. *Malaysian Journal of Learning and Instruction*, 18(2), 129-160. <https://doi.org/10.32890/mjli2021.18.2.5>

THE ISSUES AND CHALLENGES OF MATHEMATICS TEACHING AND LEARNING IN MALAYSIA ORANG ASLI PRIMARY SCHOOLS FROM TEACHERS' PERSPECTIVES

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Received: 18/10/2020 Revised: 28/4/2021 Accepted: 20/5/2021 Published: 31/7/2021

ABSTRACT

Purpose - The Malaysian government has allocated a large budget for *Orang Asli* primary school education via the Department of *Orang Asli* Development (JAKOA) to help improve the *Orang Asli* pupils' academic performance and in, Mathematics as well. Teachers face challenges in ensuring that *Orang Asli* pupils become competent learners of mathematics. Hence, there is a need to explore the teachers' perspectives on the teaching and learning of Mathematics in the *Orang Asli* schools. This study examined the teachers' perspectives on the issues and challenges of the teaching and learning of mathematics for the *Orang Asli* primary school pupils in Malaysia.

Methodology - In this qualitative study, two *Orang Asli* primary schools were randomly selected from eight primary schools within an *Orang Asli* Settlement in the District of Sungai Siput. The data were collected via focus group discussions and interviews, which were carried out during the enculturation visits and were fully transcribed and thematically analysed. The research participants were purposively selected and comprised the school's administrators and mathematics teachers.

Findings - The results of the data analysis show that there are two main themes, namely classroom challenges and school challenges, in determining mathematics competence among *Orang Asli* pupils. Classroom challenges consists of five sub-themes namely coverage of Mathematics syllabus, Mathematics teaching and learning resources, pupil engagement, language barrier, and Mathematics learning culture. School challenges consists of two sub-themes namely school attendance and discipline. To enhance mathematics competence among *Orang Asli* pupils, it is deemed important to implement programmes and community engagement.

Significance - This study contributes towards the knowledge of teaching and learning of Mathematics for *Orang Asli* pupils. Teachers are recommended to allow *Orang Asli* pupils to take home their mathematics textbooks so that they can complete their homework at home. Teachers are highly recommended to conduct mathematics teaching and learning activities in groups for meaningful and engaging lessons.

Keywords: *Orang Asli*, Malaysia, mathematics teachers, school challenges, classroom challenges, community engagement.

INTRODUCTION

UNESCO's wakeup calls in its Education for All warrants that Indigenous pupils of any country deserve equal opportunity to education alongside the general student population. However, Indigenous pupils around the world face learning difficulties in mathematics (Howard, 1995) for many reasons such as language, learning style, the type of mathematical activities conducted during mathematics instruction (Warren et al., 2004). As a result, the Indigenous pupils' academic performance has been found to be relatively lower than their non-Indigenous counterpart (Meaney et al., 2012). In further fuelling the

matter, several studies continue to position Indigenous pupils living in Australia, New Zealand, Papua New Guinea and the Pacific, as being ‘abnormal’ because of their achievement in Mathematics on standardised tests is not the same as that of non-Indigenous pupils (Meaney et al., 2012).

Civil (2018) stresses the need to harbour a harmonious interaction among knowledge, culture, language and the mathematics teaching and learning processes. This evidently forms the issues and challenges both to mathematics learning and the Indigenous pupils. The adoption of a language that *Orang Asli* pupils are more proficient certainly helps to promote their mathematics performance (S. Kanageswari Suppiah et al., 2021).

Teachers’ beliefs about mathematics, mathematics learning and mathematics teaching play a critical role in determining how teachers help their pupils to develop their mathematics (Schuck & Grootenboer, 2004). Effective mathematics lessons would embrace these beliefs about teaching and learning of mathematics among the teachers in the *Orang Asli* schools. Thus, it is deemed appropriate to seek the thoughts of these mathematics teachers, who have the vast experience in providing mathematics education for the *Orang Asli* pupils. A number of researchers have linked the success, or lack of success of reform movements in mathematics to the efforts of adequately addressing teacher beliefs (Beswick, 2005). Moreover, teachers need to acknowledge the social and cultural contexts in which mathematics learning takes place. They have to appreciate the learning environment through the eyes of the learner and thus begin to develop a customised curriculum that results from a meaningful negotiation among pupils, teachers and community.

Howard and Perry (2005) observed that school mathematics is constructed in a social context governed by rules that reflect the social and cultural rules of the wider society. However, school mathematics, though taught within social and cultural practices, may not acknowledge the mathematics of the student’s cultural origins. They further asserted that it is appropriate when considering the mathematical learning and teaching of Indigenous pupils in primary classrooms to study the beliefs of the teachers in these classrooms. Bucknall (1995) and Howard (1995) revealed that many Indigenous pupils face problems when learning mathematics. On a similar note, the Indigenous people in Taiwan exhibit differences in learning and achievement when compared to the mainstream population and yet

face similar difficulties in mathematical learning (Huang, 2008). Similarly, within the Malaysian context, the educational attainment of the *Orang Asli* children is a growing concern (Wan Afizi et al., 2014; Norwaliza et al., 2016) and involves issues such as their learning disengagement and low achievement.

Education is a prerequisite tool to enhance opportunities for learners to practise their social, cultural practices, and origins (Mohd Roslan, 2016). This also applies to the children of Indigenous people. Indigenous pupils can be found in various countries and they are relatively performing academically much better than before, but still lower when compared to the general student population. This improvement can be attributed to the actions taken by their government to provide better education for them. The Malaysian government believes “education is the main agenda in the *Orang Asli*’s development programmes and is a key mechanism in the effort to improve the quality of life amongst the *Orang Asli*” (Mohd Asri, 2012, p. 93). In addition, the Government has continuously monitored the development of *Orang Asli* community and education progress through discourses circulated by various Malaysian plans and responses received from the Department of *Orang Asli* Development (JAKOA). Yet the responses from the group, especially the representatives of *Orang Asli* in voicing out their interests of having a better quality of life are not effective enough in changing their standard of living.

Orang Asli, which means original or first peoples in the Malay language, is a collective term for approximately 18 ethnic groups living in the Peninsular of Malaysia. By ethnicity, the JAKOA has divided them into three categories of the Negrito (Kensiu, Kintak, Jahai, Lanoh, Mendrik, Batek), Senoi (Semai, Temiar, Jah Hut, Chewong, Mah Meri, Semoq Beri), and Aboriginal Malay or Proto-Malays (Temuan, Semelai, Jakun, Orang Kanaq, Orang Kuala, Orang Seletar) (Abdul Ghani, 2015; Minority Rights Group International, January 2018). From the language point of view, the *Orang Asli* are divided into two linguistically distinctive groups, which are rooted to the Mon-Khmer family (comprising of the Temiar, Senoi and Negrito-spoken languages) spoken by the Negrito or Senoi, and the Austronesian family spoken by the Proto-Malay.

Within the context of teaching and learning, studies have indicated that *Orang Asli* children learn differently compared to the mainstream Malaysian pupils. There are also major differences in the pedagogy and ways of learning within the *Orang Asli* community (Endicott, 2016; Karubi et al., 2013; Nicholas, 2006). Another major issue surrounding

the *Orang Asli*'s lack of educational attainment is contributed by the language factor (Nicholas et al., 2010). In this vein, the existing Malaysian Educational Blueprint 2013 has taken a proactive action by including Indigenous and other minorities' languages in the curriculum, with the anticipation that this inclusion can help expedite the educational process and progress among the Indigenous pupils (Wong & Abdillah, 2018).

The *Orang Asli* pupils in Malaysia should have equal opportunity to receive quality education. However, like their counterparts from other countries, they tend to have issues pertaining to opportunities to receive quality education. For instance, for Indigenous pupils, particularly those living in rural and remote Australia, equity of education in terms of access to high quality education is complicated (Sarra, 2011), and this issue seems to also exist within the context of education for the *Orang Asli* pupils in Malaysia. The majority of the *Orang Asli* people receive formal education only at the primary level and unfortunately, there is also a significant trend suggesting that the majority of pupils who have completed their primary education tend to drop out from secondary school education as well (Nordin et al., 2018). Hence, a very low percentage have been successful to advance further to higher education in tertiary institutions. Such impediments are commonly associated with several factors, which include the *Orang Asli* pupils' attitudes, lack of awareness among parents about the importance of education, their local culture, school leadership, school environment, and problems related to the process of teaching and learning (Abdullah et al., 2013).

Some of these problems are also related to the teaching and learning of mathematics in *Orang Asli* primary schools. As reported by Norwaliza et al. (2016), the educational attainment of the *Orang Asli* children is obstructed by issues such as learning disengagement and low motivation despite the efforts made by the Malaysian Government. Apart from the poor academic performance, their dropout rate for secondary school is more serious compared to the primary school (Hassan et al., 2018) and the dropout rate still remains has a great cause of concern, which in return affects their academic achievement (Sharifah et al., 2011).

Bronfenbrenner Ecological Theory

Bronfenbrenner (1986) has proposed the Bronfenbrenner Ecological Theory, which presented a perspective on the socio-cultural factors

consisting of five levels that influence the learning style of a community. The first level is named microsystem which describes the setting or context in which a person lives. In this case it refers to the area inhabited by the *Orang Asli*. This is perhaps the main reason for the *Orang Asli* children to be left behind in education, including mathematics, as they lived in remote or rural areas. The second is the mesosystem which describes community interactions. In the context of this study, it refers to the situation involving intra-community dialogues, whereby the *Orang Asli* pupils feel comfortable when interacting with each other.

The third is the exosystem that describes a person's interaction with parties that are outside of his or her socio-cultural setting. This may explain the response of *Orang Asli* pupils towards their mathematics teachers as well as other staff in the school who are not from their community, thus causing these *Orang Asli* pupils to interact less with them. Even if there is interaction, it is limited. The fourth is the macrosystem which is about the chronological life. For the *Orang Asli*, they usually do not live alone. Their life is with their community. Yet when in school, *Orang Asli* pupils sometimes have to go through the process of teaching and learning activities individually, which is uncommon in their way of life. Thus, they prefer doing activities in groups and when required to do something individually, they become shy.

The fifth and final level of Bronfenbrenner's ecological systems theory is known as the chronosystem. This system consists of all of the environmental changes that occur over the lifetime which influence a person's development, including major life transitions, and historical events. This cronosystem encompasses the overall changes in an individual lives that are influenced by the education system, development, and other programs that are beyond his or her knowledge and experience. It is in this sense that made it difficult for them to accept the existing education system, especially when they need to move from the *Orang Asli* schools to join the mainstream secondary schools.

Putting the context of the Bronfenbrenner Ecological Theory within the *Orang Asli* pupils' mathematics learning, the ecology reasoning suggests that the sociocultural values within a remote community, like for the *Orang Asli* pupils play a pivotal role in determining their acceptance and adaptation to ideas which are not usually practised, communicated, or valued in their way of living. Noteworthy, for the *Orang Asli* people, these five levels are interrelated.

Accordingly, findings from studies such as by Wan Afizi et al. (2014) affirm that the *Orang Asli* pupils' educational performance is still low in spite various implementations of infrastructure developments and educational programmes that targeted them. In examining further, the sociocultural values as prescribed by the Bronfenbrenner Ecological Theory, Wan Afizi et al. (2014) ascribed this phenomenon to factors such as parental attitude that did not put great emphasis on their children's education, *Orang Asli* pupils' low motivation to learn and resisting the formal school culture. Because of the perceived importance of continuous research that needs to be carried out within the education among the *Orang Asli* pupils in Malaysia, especially within the context of their performance in Mathematics education, this study was conceived to examine the teachers' perspectives on the issues that challenge the teaching and learning of mathematics among *Orang Asli* pupils in Malaysia.

METHODOLOGY

For this exploratory qualitative study, the researchers had identified Sungai Siput district in the state of Perak in Peninsular Malaysia, which has the largest number of schools for *Orang Asli* pupils. This district had eight *Orang Asli* primary schools and from these eight schools, two schools were randomly selected for the purpose of the enculturation visits for this study.

Teachers' perspectives on the issues of mathematics learning and teaching in *Orang Asli* primary schools was explored. A total number of participants involved were 12, comprising of seven teachers from School A and five teachers from School B. From School A, the participants were Teacher A1 (the English teacher and was holding the post as the School Administration Assistant), Teacher A2 (the Mathematics teacher), Teacher A3 (the Mathematics teacher); Teacher A4 (the Mathematics teacher), Teacher A5 (the Mathematics teacher), Teacher A6 (the Malay Language teacher), and Teacher A7 (the Islamic Education teacher). From School B, the participants were Teacher B1 (the First School Administration Assistant), Teacher B2 (the Co-Curriculum Administration Assistant), Teacher B3 (the Mathematics teacher), Teacher B4 (the Special Needs Pupils Mathematics teacher), and Teacher B5 (the Mathematics teacher).

Gaining Access to Research Sites

Prior to the visit, the researchers had obtained permission from the Malaysia Ministry of Education, the State Education Department and the school headmasters to carry out the study within the schools. The researchers had also identified the school administrators and mathematics teachers within each school to participate in the study. Qualitative research also places emphasis on the context or location in which the study is conducted. Thus, in this study, the researchers not only conducted Focus Group Discussion and interviews in the schools involved, but also selected and involved teachers who had long served there to provide the information needed for this study. The researchers are of the view that the selection of these teachers were appropriate because they were there in the context in which the study was conducted. Furthermore, their thoughts and perspectives were relevant because they were teaching there and had long been interacting with the Orang Asli pupils, and some of them were hostel wardens. This in a sense indicated that they understood the lives, norms and thoughts of the Orang Asli pupils in their schools. The researchers had also gained their consent to be involved in this study prior to the enculturation visits to the schools.

For the purpose of facilitating admission to the research sites as well as to establish repertoire with the school and the research participants, two months before conducting the enculturation visits, and after making a selection of the two schools, the researchers had sought and established personal communication with a former Headmaster who had served in several Orang Asli primary schools in Sungai Siput. His views, suggestions and knowledge that he had willingly shared with the researchers had indeed made it easier for the researchers to interact with the research participants.

The qualitative data was obtained via FGD and interviews. For this purpose, the researchers had designed the interview guide based on literature. Prior to the enculturation visits, the interview guide was presented and evaluated by three experts from the Education Department at the researchers' university. They had unanimously conferred that the interview questions were relevant and in line with the purpose of the study. Nevertheless, these experts had provided minor suggestions to improve the questions in the interview guide. Hence, the researchers had further refined the guide prior to the visits to School A and School B.

Examples of the interview questions are as follows:

- (i) How is the practice of teaching and learning Mathematics in this school?
- (ii) How often is teaching and learning in small groups implemented in the Mathematics classroom?
- (iii) How often is teaching and learning in groups according to ability levels held in the Mathematics classroom?
- (iv) How often is individualized teaching and learning held in the Mathematics classroom?
- (v) How often is the teaching and learning of peers held in the Mathematics classroom?
- (vi) How is the frequency of procedural teaching and learning during the implementation of Mathematics teaching and learning activities?

The FGD and interviews were supposed to be unstructured in nature, but nonetheless the researchers decided to make it a semi-structured in order to serve as a consistent guide throughout the interview sessions. The FGDs and interviews, which were carried out in the morning and lasted for about two hours, were carried out in the school headmasters' office. All the FGD and interview sessions were audio taped. The qualitative data collected was organized (Fuziah et al., 2018), fully transcribed before analysing them thematically (Clarke & Braun, 2013; Fuziah, 2016).

Context of the Study: School A

The researchers first visited School A, a primary school established for Orang Asli children and was situated within the oil palm plantation in the state of Perak. It was initially under the jurisdiction of JAKOA but was taken over by the Ministry of Education in 1998. Nevertheless, the JAKOA still oversees the affair of the Orang Asli pupils in the schools in the district till today. In the past, JAKOA used to have special officers who went to the schools to monitor the school and oversee the children's needs. However, as a current practice, some of the JAKOA officers are absorbed as teachers in the schools after undergoing formal teacher training.

School A had six classes comprising of two classes in Grade 3 and one class each in Grades 1, 2, 4, 5, and 6. The school had a hostel and there were 160 pupils staying there. The school did not impose a strict rule with regards to staying in the hostel and there were no specific criteria of selection for these pupils to be allowed or accepted to stay in the hostel. Hence, there were no restrictions for the pupils to go

back home at any time. Though the school had a hostel, nevertheless, some Orang Asli pupils still preferred to stay at home. The majority of the pupils' parents worked in the nearby palm oil estates and secured stable monthly income, which enabled them to own vehicles. Thus, some of the Orang Asli pupils went to school in cars or four-wheel drives, while others by motorbikes or walked to school.

Context of the Study: School B

The second school that the researchers visited was School B, which consisted of 350 Orang Asli pupils and 200 of these pupils stayed in the hostel while 150 of them stayed at home since the hostel can only accommodate 200 pupils at one time. The pupils staying in the hostel received free food while the other pupils received food that was provided under the Yearly Food Plan, which is locally known as Rancangan Makanan Tahunan (RMT). Nevertheless, the pupils staying in the hostel, like their counterparts in School A as discussed earlier, frequently went back to their own homes, which is an indication of a strong family cultural values and family bonding among the Orang Asli pupils and their families. Notably, the Orang Asli pupils in their schools used the Temiar language as a medium of communication.

School B had 15 classrooms that were segregated into two branches, namely the mainstream and the special needs education classes. There were 10 mainstream classes and five special needs education classes. Special needs education classroom had an autistic pupil while the rest were slow learners. The pupils in the special needs education classes were identified based on the diagnosis of a medical doctor.

The school also had quarters for teachers that could accommodate two people in a room and were built for the use of the staff only. Some teachers stayed in the quarters, while some stayed outside, either in rented or their own houses. The bonding between the teachers and parents seemingly were very good. For instance, the teachers were always invited during their festive celebrations.

RESULTS

This study had focused on the teachers' perspectives on the issues and challenges of teaching and learning of mathematics among Orang Asli pupils in primary schools. The findings from the enculturation visits to School A and School B, situated in the state of Perak, are presented within this section.

Table 1 shows the framework that emerged from the results of the analysis of the interviews with the research participants with two main themes, namely classroom challenges and school challenges that need to be considered when working towards the development of mathematics competence among the Orang Asli pupils. Classroom challenges consist of five sub-themes namely coverage of Mathematics syllabus, Mathematics teaching and learning resources, pupil engagement, language barrier, and Mathematics learning culture. School challenges consist of two sub-themes, namely school attendance and discipline

Table 1

The Mathematics Competence Framework based on Classroom and School Challenges in Determining Mathematics Competence among Orang Asli Pupils

Community Engagement	Mathematics Competence		Programmes to Encourage and Promote School Attendance
	Classroom Challenges	School Challenges	
	<ul style="list-style-type: none"> • Coverage of Mathematics Syllabus • Mathematics Teaching and Learning Resources • Pupil Engagement • Language Barrier • Mathematics Learning Culture 	<ul style="list-style-type: none"> • School Attendance • Discipline 	

Mathematics Competence

Generally, the teachers perceived that the *Orang Asli* pupils' mathematics achievement was still low and most of them usually were not able to solve mathematics word problems. For example, in the year 2018, in School A, only 32 percent (eight pupils) out of 25 pupils had passed the mathematics examination in the Primary School Achievement Test (UPSR). It was reported that the *Bahasa Malaysia* (Malay Language) subject was easier to them compared to the

Mathematics subject. Interestingly, when compared to other subjects, Mathematics to them, seemingly, was the most difficult subject.

According to the Mathematics Teacher A5 and Mathematics Teacher B3, their pupils usually were able to answer questions comprising of symbols and mechanical in nature Both these teachers agreed that the *Orang Asli* pupils were quite competent in solving basic mathematics calculations sums or items, but they faced difficulties in solving mathematics word problems, which led them to perceive Mathematics as a difficult subject. According to them,

My pupils can answer questions that are mechanical in nature and with prescribed working procedures. They used petak sifir [multiplication grid] to memorise the multiplication tables. Sums involving basic operations and in the symbolic forms are manageable to them but when it comes to mathematics problems with many words, then they are lost. (Teacher A5)

These pupils could manage to solve sums involving basic mathematical operations and in the symbolic forms, but they usually found it difficult to solve mathematics problems with many words. Hence, they tend to obtain low marks in mathematics examinations. And that is why they say that Mathematics is a difficult subject. to learn. (Teacher B3)

Coverage of Mathematics Syllabus

The topics related to solving word problem questions were usually taught towards the end of the school term. Despite keeping these topics towards the end, the Mathematics teachers claimed they still managed to complete the mathematics syllabus set for that year. Drilling was the approach used by the Mathematics teachers for the Grade 6 pupils because they would be sitting for the Primary School Achievement Examination (UPSR). Teaching to the test approach, whereby the focus was familiarising the pupils with the examination questions and practising on the working procedures to obtain the right answers was also adopted. As mentioned by the Mathematics Teacher A3,

The purpose of drilling was our strategy for the pupils to gather as many marks as possible, especially

by attempting to answer the symbolic, procedural questions. (Teacher A3)

According to Mathematics Teacher B1, the *Orang Asli* pupils were not interested in Mathematics as they usually obtained low scores in this subject. One possible reason was the terminologies in the Malay language (academic language) used within the primary mathematics syllabuses contributed to this lack of interest.

The Mathematics operational definitions in Temiar language is limited. For an instance, there is no term of 'division' in Temiar language. Therefore, the explanation of the term or the concept of 'division' was difficult for the pupils to understand. It was difficult for the pupils to solve the 'division' questions although simple mathematics operations were involved. (Teacher B1)

The Mathematics teachers had resorted to use alternative words or terms when explaining 'division' to their pupils. For instance, according to Mathematics Teacher B3,

We most of the time used terms or words that can be easily understood by the pupils. The similar terms or words were used to substitute the meaning of 'division' so that they can follow the lessons. (Teacher B3)

Mathematics Teaching and Learning Resources

As explicated by the mathematics teacher during the focus group discussion. Attempts to use or integrate technology in the mathematics classrooms were limited to using laptops for the purpose of displaying the mathematics questions to the pupils. Usage of mathematics teaching and learning resources were also limited to power point slides due to internet access, especially when many of these schools are located in remote areas surrounded by hills and forests.

Acquisition of basic mathematics concepts can be said were generally weak, as is the case with even the Year 2 pupils. Most of the pupils are passive. I think using teaching aids and materials as well as technology can help their understanding of the basic concepts. (Teacher A2)

The Mathematics teachers also shared information related to the challenges of using textbooks in the classroom. Their pupils were not allowed to take home the textbooks after school to their homes because the teachers were concerned that the textbooks would not be brought to school the following day, either because they forgot or sometimes deliberately did not bring them along to the school.

The allocated mathematics textbooks for the pupils were kept by the teachers in the school and will only be distributed to them as needed during mathematics lessons. (Teacher B3)

These given textbooks might be torn by the pupils to make paper aeroplanes or ships. The exercise books were kept by the teachers once the pupils had completed their homework in school. (Teacher B5)

Pupil Engagement

The Mathematics Teachers A1, A2, A4, and B1 conveyed that the *Orang Asli* pupils only indicated seriousness in their schooling when they entered Grade 4, the second level of their primary schooling. Having said this, the teachers expressed that their pupils were not paying much attention to academic matters during their first level (Year 1, 2, and 3) of primary schooling. Seemingly, these teachers had attributed this issue to the lack of or absence of kindergarten or pre-school experience among the *Orang Asli* pupils.

Another challenging issue faced by the teachers when teaching mathematics to the *Orang Asli* pupils were to overcome their sense of inferiority complex, feeling shy and being passive learners. These issues became obstacles for the pupils to be actively and meaningfully involved in the mathematics lesson in the classrooms. For instance, they would shy away and remain passive when the teachers requested them to write their answers for the questions given to them. On the contrary, the pupils were able to actively participate in group activities. They usually communicated among themselves using the *Temiar* language.

Usually in the group discussion, there would be a high ability group of pupils and low ability pupils. The high ability group of pupils would aid their peers from the other low ability group. (Teacher A3)

Another emerging issue sprang from the *Orang Asli* pupils dropping out from secondary schooling. Schools, by collaborating with the Education Department, Parent Teachers Associations and JAKOA had designed programmes to encourage pupils to come to school and continue their primary schooling.

These sorts of programmes had increased the pupils' involvement in the learning of mathematics. They began to show their seriousness in learning when they entered primary schools, which certainly also involved their interest to the learning of mathematics as well. (Teacher B4)

The Mathematics teachers had resorted to methods of teaching of mathematics that involved games to induce fun in the learning of mathematics to encourage their pupils' engagement and interest in the subject. Thus, during their early primary school years, that is during Years 1 – 3, the understanding of basic mathematics concepts was taught in fun and meaningful ways to prepare the *Orang Asli* pupils for their learning of mathematics when they enter in Years 4 – 6. Moreover, it is during Years 5 and 6, the teachers in the schools usually worked very hard to prepare their pupils for the UPSR national examination.

It is worth to note that these pupils' attention span in the classrooms was also an issue for they had limited time span and were quick to be easily distracted during classroom interactions. The mathematics Teacher A4 had raised her concern regarding the classroom size. As mentioned by Mathematics Teacher A4,

... these pupils' attention span in the classrooms was also a problem. They had limited time span and were quite easily distracted during classroom interactions. (Teacher A5)

The class size ranges from 20 to 40 pupils. Year 1 has 40 pupils. Many pupils do not understand ... and most of the time, it is difficult to give them individual attention. (Teacher A4)

Language Barrier

The use of Malay language in the Mathematics classrooms in School A was in a sense had posed quite a challenge to the mathematics

teachers, especially when using formal terminologies to explain the mathematical concepts, despite the fact that most of them understood the language. Interestingly, the teachers felt that it was them who were actually facing some problems when the pupils conversed in their own native languages in the classrooms. Another issue in teaching mathematics to the *Orang Asli* pupils was that they were facing difficulty to read. A concern as expounded by the Mathematics Teacher A4 was:

If the pupils are not able to read, they would certainly be in a difficult situation in comprehending the maths questions, especially when it comes to problem solving questions....they don't understand what the question is about. (Teacher A4)

Teaching to pupils in Year 1 seemed to be more challenging because they have just entered the realm of formal education and their Malay language proficiency is very limited, resulting in almost non-competence in the academic language. The pupils from Years 1 – 3 either had only a little understanding of the Malay language or they did not understand the language at all. Therefore, language was another issue that challenged the teaching and learning of mathematics, especially among pupils in Year 1 mathematics classrooms.

With respect to the mathematics terminologies used in the classrooms, the pupils were able to understand the meaning of the term's 'addition' and 'subtraction', but they faced difficulties in understanding the notions of 'multiplication' and 'division'. Hence, the teacher had to use the terms in the Temiar language in their mathematics classrooms. (Teacher B3)

Teaching and learning mathematics word problems was indeed another added issue that further exacerbated the teaching and learning of mathematics. Usually, the teachers would resort to teaching the pupils to identify the 'keywords' in the given problem. The teachers believed that this identification of keywords would assist the pupils to construct the standard format of symbolism prior to performing the working procedures to obtain the answers.

Usually, the teachers would resort to teaching the pupils to identify the keywords in the problem. I think this method can help them to solve the given problems

because from the words they can write the standard format with numbers only. (Teacher A5)

Mathematics Learning Culture

The teachers had also voiced out their opinion regarding the learning culture in the school. According to them, “the pupils easily feel bored when they are within formal learning activities” (Teacher A4). Hence, they (the teachers) suggested that, “Teachers should bring down the maths content level when we are teaching maths” (Teacher A3). The pupils, nevertheless, enjoyed doing mathematics learning activities together with their peers. This had prompted the mathematics teachers to implement group activities in their mathematics classrooms. According to the teachers, “the pupils worked collaboratively and helped their group members when solving tasks within their groups. However, the pupils used their native language during their discussions” (Teacher A3).

The pupils who stayed in the hostel usually were able to complete their homework. On the other hand, those who were staying with their families did not manage to do so. As mentioned by Teacher A6,

The pupils staying in the hostel managed to do their homework because of the schedule set by the hostel authorities and their peers were around.... But the pupils who were staying at home had house chores that needed to be done. And also, there were no one to help them with their homework... the parents too cannot help. (Teacher A6)

With regards to their mathematics performance, pupils staying in the hostel seemed to perform better in mathematics. Perhaps this may also be due to the fact that there was no issue with these pupils’ school attendance. It was a practice among the teachers to visit the pupils’ home if they were absent from school to identify the reasons and to encourage them to attend the school the next day.

The schools were also equipped with a computer lab. However, only some computers were usable. There were also issues related to teachers’ lacking skills to keep up with the rapidly evolving technological development. In fact, there were also issues related to the internet speed and connection.

The teachers utilized computers in the lab for teaching purposes only in order to familiarize themselves with the advent of technology. (Teacher A1).

...the network of internet connection was slow and as a result using the computers for the learning was very limited. (Teacher B4).

The second main theme is school challenges, which seemingly need to be considered when enhancing mathematics competence among the *Orang Asli* pupils. School challenges consists of two sub-themes, namely school attendance and discipline.

School Attendance

During the researchers visit to School A, one of the issues raised by the teachers was the absence of ‘academic competition’ among the pupils which perhaps may be due to them being within their own community – and they have no role models to emulate. Being able to come to school – or to be in school – is in a sense, a blessing to the pupils. As mentioned by Teacher A7,

Academically, they seem to not to compete with each other. They usually only live within their community... maybe that is the reason why they don't compete among themselves. There is no someone special or role model that they can follow...to indicate the importance of education for them. Just being able to come to the school is somewhat already good enough for them. (Teacher A7)

Nevertheless, the teachers had mentioned that of late, more parents were beginning to accept the fact that it is important for their children to attend school consistently. This was voiced by Mathematics Teacher A5,

Things are beginning to change nowadays and their parents are beginning to appreciate education and their awareness on the importance of education for their children is increasing. (Teacher A5)

This awareness had indeed contributed to the increase in the school attendance. Noteworthy, the pupils in this school were from 12 different villages within the district. Notably, there are differences in

the academic performance among the pupils who were staying at the hostels when compared to those living at their own homes. Perhaps this may attribute to the fact that there is no issue with these pupils' school attendance. This matter was highlighted by Teacher A3,

Orang Asli pupils staying in the hostel seem to perform better in mathematics. (Teacher A3)

In School B, the pupils had transportation facilities, which comprised of a school bus and a coaster. There were 150 of pupils who utilized the bus. The coaster was used to cater for pupils who were living in the surrounding hilly areas. These transport facilities were organized by the Department of Orang Asli Development (JAKOA), as requested by the *Orang Asli* people and the school administration. As a result of this facility,

The percentage of pupils' school attendance is higher compared to the time when this arrangement was not available. (Teacher B5)

The pupils' school attendance is still affected during fruit seasons, as the pupils usually followed their parents to harvest the fruits. (Teacher B1)

An interesting find is that the *Orang Asli* people tend to easily believe in rumours. For instance,

News on kidnapping of children and child trafficking faced by one society may affect them, which caused them to forbid their children from attending school. (Teacher B2)

Such rumour-based beliefs contribute to the *Orang Asli* pupils' poor school attendance as their parents' fears of unpleasant events or tragedies might strike their children if they attended school. High level of trepidation had also triggered the *Orang Asli* people to request explanation on such cases from police officers. Besides that, the local tribal culture is also playing another prominent role as Teacher B3 elaborated.

These people believe that parents cannot scold or raised their voices on their children. Thus, the Orang Asli parents did not scold their children for being absent from school. (Teacher B3)

Despite their cultural belief, the parents often required the teachers' guidance on school issues and counselling for their family issues.

The Orang Asli pupils have no problem listening to the advices given by the teachers and to follow the school rules. (Teacher B5)

Accordingly, there were evidence of relatively improved school attendance among the *Orang Asli* pupils, especially with the increased awareness among parents on the importance of education and improved facilities such as transportation and better quality of life. Nevertheless, the *Orang Asli* pupils' attendance to schools have seemingly improving at present.

Nowadays are so much better compared to their school attendance years ago. This increase in school attendance maybe attributed to the availability of various self-owned transportation. (Teacher B4)

Discipline

There were no records of disciplinary actions taken on the *Orang Asli* pupils in the school as there are no serious offences committed. Nevertheless, there have been incidents showing very minor disciplinary behavior among the *Orang Asli* pupils, as shared by Teacher B5,

The act of vandalism was an issue among the pupils, especially pertaining to keeping the schools' property safe and in appropriate conditions. (Teacher B5)

The Mathematics Teacher B4 had added,

The pupils were more likely to scribble on the tables or plucking the flowers to decorate their classrooms or the school's corridors. (Teachers B4)

Programmes to Encourage and Promote School Attendance

The teachers from School A were very attached to the school as they participated meaningfully in all the events or programme held by the school. Various programmes that involved the pupils, as well as the teachers, were implemented, for instance the Teacher-Pupils Birthday Celebration Programme. As shared by Teacher A1,

During this programme, usually held during the morning assemblies, the pupils were given the opportunities to speak... to sort of give a speech... and interestingly I can see that they really feel appreciated. (Teacher A1)

It is interesting to note that the school's *Sewang* (*Orang Asli* native dance) Dance Team had received invitation to perform at national levels, an achievement which indeed had made the school proud" (Teacher A2). The pupils' parents were also invited to join in the Annual *Orang Asli* Day celebration (*Sambutan Hari Orang Asli Tahunan*). One of the most popular events within this programme was the "Karaoke Session" – as noted by the teachers during the enculturation visit,

The parents, and their children as well, really love singing" Another interesting programme was the called Kalam Jamaie, a programme which is quite similar to the 'choral speaking' activity. (Teacher A2)

Teachers were also concerned about the progress of the *Orang Asli* pupils so that they were not left behind in primary school education. They need to complete their study in the primary school before continuing their education at the secondary school level. Noteworthy, the teachers voluntarily visited the homes of *Orang Asli* pupils if they did not attend school.

There is this so-called Pupil Home Visit Programme. It is a practice among the teachers to visit the pupils' home if they were absent from school to know the reasons for not coming to school. The purpose of the visit was also to encourage them to attend the school the next day. (Teacher A3)

The primary school had organized some programmes towards developing successful learning approaches among the *Orang Asli* pupils. Typically, a programme called 'Love Trail' (*Jejak Kasih*), between the teachers and parents was organized to identify the reasons for being absent from school. The school counsellor was the person in-charge for this programme. Similarly, the Ministry of Education (MOE) had introduced a programme called 'Caring Visits' (*Ziarah Cakna*), which was implemented to encourage the positive and caring relationship between the pupils' parents and the teachers.

The programme in a way had aided the teachers to gain access to the *Orang Asli* villages. On the other hand, the school had also organized the programme called ‘Caring Teachers’ (*Guru Penyayang*) that was implemented in the mornings before carrying out the process of teaching and learning. There were three teachers who were involved to conduct the programme every day. The programme was implemented by requesting the pupils to queue in front of the school gate for the purpose of checking the pupils’ cleanliness (combing their hair, applying powder on their faces, sanitizing them for hygienic purposes and tidiness of their school uniform). Throughout the duration of implementing the programme, “the school authorities ensured the interest of the programme was for the pupils to attend school and exposed them to objectives of attending school. Besides that, the school pupils were required to gather in the mornings during school period for 30 minutes” (Teacher B1). There were also other programmes organized, such as quizzes, and they were rewarded when they successfully answered the questions. The act of giving rewards was to encourage the pupils’ active participation. To instil perceptiveness of religious and moral values among pupils, religious and spiritual based activities were conducted on every Friday. The Muslim pupils were led by the school’s Panel Head of Islamic Studies while the non-Muslim pupils were led by the school’s Panel Head of Moral Studies.

Amidst the many efforts taken, there was still an inclination among the *Orang Asli* pupils to “drop out when they entered secondary schools presumably due to feeling inferior. There were pupils who tended to work or secured jobs upon completion of their primary school” (Teacher B2). Their priority was more on the importance of earning money for their families. On the contrary, the teachers reported that there were eight to 11 pupils who had successfully completed their higher level education. These academically successful pupils were invited to the school to share their academic experiences with the pupils. There were also the individual differences between the *Temiar* and *Semai* pupils, whereby “the *Temiar* pupils generally felt themselves as being inferior compared to the *Semai* pupils. The *Semai* pupils were respected more compared to *Temiar* pupils” (Teacher B3). Most of the *Orang Asli* pupils’ people had “the ambitions to become doctors, police officers, teachers, soldiers, oil palm workers, and timber workers” (Teacher B4). They were ambitious and seemed to be brave to express their dreams.

Despite these setbacks, numerous programmes that had been implemented by the schools had provided opportunities for the

teachers and the pupils' parents to positively interact and helped to increase the pupils' school attendance. In a sense, the enhancement of close relationships between the teachers and the parents has contributed to the awareness on the importance of education for their children among the *Orang Asli* pupils' parents.

DISCUSSION

Mathematics Competence

In this study, it was found that the Indigenous pupils used basic arithmetic operations to solve sums in the symbolic forms but they faced difficulty in solving mathematics problems which comprised of many words. Therefore, they viewed Mathematics as a difficult subject and they usually obtained unsatisfactory results in Mathematics. This finding is in line with the finding of Howard (1995), whereby they concluded that many Indigenous pupils experience difficulties when learning mathematics similar to the Indigenous pupils living in Australia, New Zealand, Papua New Guinea and the Pacific, who tend to perform relatively poorly on standardised tests when compared to their non-Indigenous counterparts (Meaney et al., 2012). The findings also support the findings of Wan Afizi et al. (2014) and Norwaliza et al. (2016) who reported that the educational attainment of the *Orang Asli* children remains a challenge due to issues such as learning disengagement.

Generally, the Indigenous pupils were more able to solve basic mathematics calculations or computation questions when compared to solving mathematics word problems items. This is because they could manage to solve sums involving basic operations and in the symbolic forms. However, they usually find it difficult to negotiate with the linguistics density of lengthy items in mathematics word problems, especially when the items are in a language that they are less competent in.

Hence, they tend to obtain low marks in mathematics and this seemingly contributed to their perception that Mathematics is a difficult subject to them. This finding complies to the elaborations made by Howard and Perry (2005), which is school mathematics will be more accessible if made meaningful by invoking the social context and the cultural practices of the Indigenous people's community.

Classroom Challenges

The *Orang Asli* pupils also face an added challenge to learning Mathematics due to their social background that is very different from what is being portrayed in the school syllabus Hanafi et al. (2014). Syllabi and curriculums are often designed with the general population in mind, but the learning capabilities of the *Orang Asli* pupils are very different from their peers in Malaysia.

Thus, the need arises for Mathematics teachers at *Orang Asli* schools to reflect more on their teachings, and consider adapting, adopting or creating alternative approaches when implementing mathematics teaching and learning activities, which could involve pupils engaged in activities outside their normal classrooms. The designed activities need to actively involve them both mentally and physically, instead of keeping them seated for a long time. The teaching and learning activities should also include the use of teaching and learning resources or aids that are 'close' to them, which they often see or use in their everyday lives. With the advantage of the added familiarity introduced by these materials, the mathematics lessons become more comprehensible to them.

There is also the needs and skills of the Mathematics teachers to orchestrate or design and plan their lesson plans that could support their implementation of mathematics teaching and learning activities that incorporate the notions of fun, tangible (concrete); hands-on; 'play' in nature; game-based learning, more of 'outside of classrooms' teaching and learning activities or outdoor activities. For instance, within one lesson, the teachers ought to include a variety of learning experiences that are aligned with the *Orang Asli* pupils' learning needs. These wide repertoire of learning experiences could, presumably, attract and motivate the pupils' to continuously stay focus during mathematics lessons. Additionally, the Mathematics teachers should also consider the psychosocial effects of their actions in classrooms to abide with the pupils' culture, for them to feel accepted and appreciated by the teachers.

During the mathematics lessons, the Indigenous pupils would easily get bored. To address this situation, mathematics teachers could resort to implementing group activities in their mathematics classrooms because the Indigenous pupils would rather be among their peers and found it to be more convenient to interact among them in their own native language. Regulating group activities may address the issue of

pupils being uninterested in Mathematics compared to other subjects or finding it difficult. As mentioned by Huang (2008), this situation is also apparent among the Indigenous pupils in Taiwan, who faced difficulties in learning mathematics.

The Mathematics operational definitions or terminologies in the 'Temiar' language are limited. Therefore, the pupils faced some difficulties understanding the Mathematics when being taught in the Malay language. In fact, the issue of Indigenous pupils encountering difficulties when learning mathematics had been raised since the 1990s (Howard, 1995). Language is a barrier for the teachers to communicate, interact meaningfully and effectively with their pupils because the teachers themselves were not proficient in the *Orang Asli* language. The pupils were passive due to language inhibitions as well as due to their readiness to learn. Moreover, their purpose of attending schools was also to socialize with their friends. Hence, these Indigenous pupils went through incompatibilities that involved language and resources used for teaching and learning of mathematics, which led them to believe that mathematics lessons were difficult to follow (Sicat & David, 2016).

Apart from that, the *Orang Asli* pupils did not fully understand the importance of education for their own future. For instance, they did not see the importance of textbooks as a source of knowledge for learning. When at home, as reported by the teachers, some of them would tear the pages of their textbooks to make paper aeroplanes and ships. Hence, whenever possible, the pupils will be guided to complete their homework in school, and after completing the homework, the teachers would collect the textbooks for safe keeping.

Their attendance in school was also not that satisfactory. Nevertheless, they made it a point to attend school during the examination periods because of their interest to obtain the primary school leaving certificates as a proof of completing their primary education. Even though there were no records of discipline issues, there were some issues involving very minor vandalism such as graffiti or damaged physical objects within the school compound.

In a nutshell, Mathematics is context-based and language bound especially for word problem items where language can either assist or obstruct students' mathematical achievement. The language of the mathematical items is capable of affecting bilingual students' achievement in Mathematics assessment especially for word

problems, particularly for Indigenous pupils. When factors such as the level of exposure to their community language spoken at home and academic language used in school interact, the Indigenous pupils' academic performance is compromised especially when factors such as speed, efficiency or accuracy in solving problems intersect and confound their mathematics performance in a language that they are less proficient in (Tanius et al., 2018)

This finding complies to the elaborations made by Howard and Perry (2005), which is school mathematics must be constructed based on the social context governed by rules that reflect the social and cultural rules of the Indigenous people's wider society. In doing so, they further clarified that the school mathematics need to be taught within the social and cultural practices and, origins of the Indigenous community.

School Challenges

The Indigenous pupils' attendance to school were not consistent, which is partly due to the lack of awareness concerning the importance of education among their parents. Nevertheless, in recent years, the *Orang Asli* parents' awareness regarding the importance of their children attending schools has greatly improved. This finding supports the finding of Abdullah et al. (2013) who reported that the awareness among parents about education is a factor that contributes to the Indigenous pupils' school attendance. The finding also supports the finding of Nordin et al. (2018) who alleged that despite many efforts made by the Malaysian Government, the standard of education of the *Orang Asli* children have not been productive enough due to the high dropouts from primary schools to secondary schools.

The teachers also highlighted that the Indigenous pupils' attendance at primary schools was a big issue but it was indeed a challenge when it came to them continuing their education in the secondary schools. This finding supports the claim made by Abdullah et al. (2013), who reported that there was a significant trend of a higher rate of dropping out of the secondary schools among them.

Notwithstanding the efforts taken by the Malaysian Government, the standard of education of the *Orang Asli* pupils has not fully yielded the expected results, even though improvements in some aspects such as attendance, have been noted. It is recognised that there remains a high number of dropouts from both primary and secondary schools,

coupled with all-round poor academic performance (Hassan et al., 2018).

To encourage the pupils' attendance, the school management had taken initiatives to collaborate with the JAKOA, the School Parent-Teacher Associations (PTA), and the Education Department in implementing various programmes such as RMT, *Jejak Kasih*, and *Ziarah Cakna*. All these were done to enhance the positive relationship between parents and teachers. These findings are in line with the findings of Ramle et al. (2013) who indicated that parental involvement, the quality of school leadership, and the social culture milieu of the *Orang Asli* society are important elements that encourage relationships between the *Orang Asli* parents and teachers.

This finding complies with the elaborations made by Howard and Perry (2005) that school mathematics is more meaningfully constructed by students when a harmonious bridge is formed between social context of the school and the cultural norms of the Indigenous society.

Programmes to Encourage and Promote School Attendance

Notably, the teachers were also concerned about the progress of their pupils so that they are not left behind in education. Their pupils' school attendance was a concern to them. The teachers from School A were very attached to the school in the sense they participated meaningfully in all the events or programme held by the school. Various programmes that involved the pupils, as well as the teachers were implemented. For instance the Teacher-Pupils Birthday Celebration Programme. It is interesting to note that the school's *Sewang* (*Orang Asli* native dance) Dance Team was recognised at a national level. The bond between parent and teachers were also forged through many social celebrations such as the annual *Orang Asli* Day celebration (*Sambutan Hari Orang Asli Tahunan*) and the "Karaoke Session".

Community Engagement

Community engagement also plays a crucial role in Indigenous' pupils' education, especially when teachers display strong commitment towards their pupils' welfare. This is evidences when schools implemented certain programmes for their pupils and their parents as well, such as the 'Class for Indigenous Adults' (KEDAP). Hence, adult learners were also given an opportunity for a free education and these adult learners, who had enrolled in the class, were each given an

allowance of RM19. These adult learners for KEDAP were identified and selected according to their level of prerequisite learning abilities.

Implication

The teacher's action of not allowing the *Orang Asli* pupils to take home their mathematics textbooks may be relevant to the teachers. Nevertheless, this action is seen as less appropriate in terms of learning because the pupils were not given the opportunity to study at home. This seems to indicate to the pupils that the learning of mathematics only happens in schools. Teachers should innovate such actions so that the learning of mathematics continues into their pupils' home to learning beyond the classrooms .

CONCLUSION

From the study, the researchers learned that the *Temiar* language was the common spoken communicative language spoken by the *Orang Asli* pupils and was not available in printed or written form. For effective and meaningful classroom interactions, the mathematics teachers teaching at the *Orang Asli* primary schools should have the capacity to communicate and explain the mathematics content in the *Temiar* language during the early years of the pupils' schooling, as during those formative years they are in the midst of adopting the primary school culture, and the fact that Malay language is not naturally spoken at their homes. Hence, code-switching between the *Temiar* language (social language) and Malay language (academic language), when teaching and learning mathematics in the classrooms, could be relevant during early years of the *Orang Asli* pupils primary schooling.

Group work is a recommended pedagogical approach to be considered when designing classrooms teaching and learning activities for the *Orang Asli* primary schools pupils because of their preference for active learning among their peers, especially learning that happens outside the classrooms.

During mathematics lessons, Indigenous pupils easily feel bored. To improve this situation, the mathematics teachers would need to implement group activities in their mathematics classrooms because these pupils preferred to interact and communicate among their peers, especially when they adopt their own spoken mother tongue language.

This study emphasises that the school mathematics for the *Orang Asli* pupils must be constructed by taking into account their social context and culture.

When connections are made to their environment, mathematics lesson becomes meaningful and this experience enhances the teaching and learning of Mathematics for *Orang Asli* pupils. In short, their social and cultural practices must be contemplated and negotiated with the school curriculum for meaningful teaching and learning in mathematics to occur among the teachers as well as the *Orang Asli* pupils. In summarising the findings, this study had highlighted the need for considering the support for programmes that have the potential to encourage and promote school attendance, and community engagement to overcome the classroom and school challenges that hinder *Orang Asli* pupils' mathematics competence.

ACKNOWLEDGMENT

This research was supported by the Ministry of Higher Education of Malaysia through the Fundamental Research Grant Scheme of Education (FRGF/1/2018/SSI09/UUM/02/1) with s/o code 14201.

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