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## Use of Cerita-cerita Rakyat Nusantara App in Developing Oral Interaction Skills Among Lower Primary Students

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Most Lower Primary Malay students in Singapore face difficulties and not proficient when interacting verbally using Malay Language (ML). This is based on the research entitled Perception of Malay Language Teachers on Issues Related to Students' Oral Proficiency. With the use of English language extremely prevalent in Singapore, Singaporean students are increasingly abandoning the use of their ethnic languages. This is a concern as Mother Tongue Languages are often linked to the transmission of values and culture.

Currently, the students are incompetent to interact fluently and proficiently using ML in their daily lives. To identify the students' gaps in their oral interactions skills and to address the difficulties, ML teachers from Zhenghua Primary School designed a systematic approach and structured process to develop oral interaction skills among students. An interactive e-book, Cerita-cerita Rakyat Nusantara (CRN) App developed by Malay Language Centre of Singapore was used.

This lesson study adopted MOE Malay Language Curriculum Model Framework (2015) with emphasis on speaking and oral interaction skills. The CRN App was used as the ICT teaching tool to enhance acquisition of speaking skills.

A group of Primary Two students from Zhenghua Primary School was involved in this research. To identify the learning gaps, a survey, a reflection, a pre-test and post-test were used as instruments for data collection. The tests consist of an oral interaction evaluation assessment.

A survey was done prior to the pre-test to gather information on the students' profile. Data from the survey showed the usage of ML in their daily life. 97% of them learnt to read in school. 91% liked to read ML storybooks but only 26% read daily. 48% spoke ML at home and 70% spoke ML with their friends in school. 78% spoke in a mixture of ML and English Language with their friends in school. This was an alarming trend and showed the main cause of the students' difficulty in speaking the standard ML.

At the end, the students did a reflection which reflected the use of CRN app in developing students' language skills. It showed that 50% of them could read the Nusantara folklore with correct articulation while 55% could read fluently. 43% had attempted to read the poem with the correct intonation. 78% understood the meaning of the vocabulary learnt while 50% of them used the vocabulary learnt when speaking. Lastly, 61% could answer the comprehension questions correctly. Beside reflections, six students were interviewed and the interviews were recorded. From the reflections and interviews, it showed that the CRN App enhanced students' proficiency and confidence level in using ML.

The pre-test was done before the introduction of the CRN App. The differences measured based on the oral interaction evaluation results. Before the study was conducted, the pupils involved were tested on their oral interaction skills. They watched a short video, recounted what they had seen using complete sentences in standard ML and connected it with their personal experiences.

Based on the pre-test data, none of the students achieved more than 85 marks which was the benchmark. The highest mark achieved was 57 while the lowest mark achieved was 23. The results from the post-test data showed that 18% of them scored more than 85 marks. The highest mark achieved was 100 while the lowest mark achieved was 40. Hence, there was a tremendous increase of marks scored by the students after using the CRN App.

In conclusion, based on the 43% differences measured for the highest marks scored between the pre-test and post-test results, the CRN App had been effective in developing students' oral interaction skills and in building their personalities and characters.

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## 11th grade students' self-efficacy beliefs in mathematics classroom by using lesson study and open approach

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Students' beliefs about the self in relation to mathematics are the conceptions of their competence in mathematics and their views on the personal relevance of mathematics especially self-efficacy beliefs. Self-efficacy beliefs show the belief in their knowledge and ability in solving mathematical problems. Therefore, the teaching and learning should be the students to think and solve problems by themselves (Op't, Corte & Verschaffel, 2002). Inprasitha (2003) presented lesson study and open approach for develop classroom. Lesson study was adapted to Thailand for develop teachers' collaboration to improve open approach as a teaching approach which aims to permit all students to learn mathematics in a way that is their abilities.

This study aimed to explore students' self-efficacy beliefs in mathematics classroom. Data collected from 38 eleventh grade students who are studying in the second semester of academic year 2016. The instruments of research consist of mathematics-related beliefs questionnaire, interview and lesson plan. The research is divided into two phases as following: the first phase was exploration students' self-efficacy beliefs in traditional classroom context which focused on teachers describe the content and explain an example. The second phase was exploration students' self-efficacy beliefs in mathematics classroom using lesson study and open approach. This phase used lesson study to improve open approach as a teaching approach as following: 1) Lesson study team collaboratively plan the lesson by adapt open-ended problems from The open-ended approach a new proposal for teaching mathematics (NCTM, 1997). 2) Researcher who is one of lesson study team teaches the lesson in classroom of target group following 4 steps of open approach. And 3) Lesson study team reflect on the lesson for collaboratively develop the lesson. After that researcher interviewed students about self-efficacy beliefs in mathematics. Data were analysed by using basic statistics and protocol analysis.

The result of study revealed that students' self-efficacy beliefs in mathematics classroom using lesson study and open approach have some subcategories of students' self-efficacy beliefs had changed average from the traditional classroom as following: 1) a belief that I can understand the difficult topics in mathematics has the average changed from uncertain to partially agreement level, 2) a belief that when compare to other friends, I think I am good at mathematics has the average changed from partially disagreement to uncertain level and 3) a belief that based on my skills, I am confident that I can score well in mathematics has the average changed from partially disagreement to uncertain level. In addition, based on protocol analysis of student interviews revealed that students had a positive perception of their self-efficacy beliefs in mathematics classroom when compared with the first phase.

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## Flipped Lesson on Pythagoras' Theorem

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Lesson Study (LS) consists of a detailed study of the practice of teaching. The premise of LS is that the best way to improve education is for teachers to study the processes of teaching and learning in classrooms, and then devise ways to improve them (Fernandas & Yoshida, 2004). Based on this belief, a team of math teachers used LS as the practice-based research to determine the effectiveness of the flipped lesson on Pythagoras' Theorem. The research theme was higher order thinking in mathematics.

The flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed. Short video lectures are viewed by students at home before the class session, while in-class time is devoted to exercises, projects, or discussions. With the growing accessibility of technology for flipped classroom and positive results reported by teachers and researchers, the math teachers worked as a team to develop the lesson package so as to free curriculum time for higher order thinking. Although the time taken to prepare the lesson package was more than the usual handout in form of notes, the teachers believed that the flipped classroom would enable students to have deeper understanding of concepts and take more ownership of their own learning.

The SOLO taxonomy was used as the theoretical framework to guide the designing of the unit lesson and development of activities to teach the levels of understanding of Pythagoras' theorem. All 10 secondary two classes were taught using the flipped lesson package by the team of five teachers. 203 students took the pre-test with an average score of 7.59 out of maximum 10 marks, the standard deviation was 1.93. This suggested that most students had some concepts of Pythagoras's theorem. 22 students obtained less than 5 marks. An animated PowerPoint slides video created by the teachers on an introduction of Pythagoras' theorem was emailed to the students. For the post-test, 353 students took the test, with an average of 9.80, with standard deviation of 0.5. No student obtained less than 5 marks. That is, all students passed the post-test. The standard deviation of 0.5 indicated that two third of the students score above 9 marks. The pretest and post test were not compulsory and were used to gauge students' understanding of basic concepts of Pythagoras' theory.

Following the lesson study protocol, one teacher taught the first one hour research lesson and was observed by the team of teachers. More time was devoted to higher order thinking, the discussion on the converse of Pythagoras' theorem and Pythagorean triplets were conducted within the one hour lesson after recap of what the students learned on their own. Some refinements were made to the lesson plan after the debrief session of the first research lesson. The second teacher conducted the second one hour research lesson of the same content with a different class of students. In particular, the second teacher spent more time on the discussion of the Pythagorean triplets.

The data collected were field notes on lessons, photos of some students' work, tests, assignment and teachers' reflection. The discussion during the research lessons focused on the multi-structural and relational levels of understanding of Pythagoras' Theorem within the SOLO taxonomy, which promote higher order thinking. Seeing what works and what needs to be highlighted in order to ensure learning take place had been enriching for each math teacher. The flipped lesson appeared to be effective in the teaching of Pythagoras' theorem and the flipped lesson provided more time in class for teachers to engage their students in higher order thinking.