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BEYOND CLASSROOM BOUNDARIES, ENHANCING MARGINALIZED CHILDREN'S SELF-CONCEPT THROUGH LEARNING OUTSIDE CLASSROOM APPROACH

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Abstract: Workplace expectations and scenarios in this 21st century require human capitals who are equipped with competencies to embark in the STEM related careers. Therefore, marginalized children need to be prepared and upgrade themselves. Analytical scrutiny of marginalized children talent development often found low self-concept as the most important factor which inhibit their learning development. It is argued that effort to enhance self-concept among marginalized learners must be revolved around their surroundings. Conducive and meaningful learning environment need to be crafty designed to suit their needs and tendencies. In this study, self-concept covers evaluative appraisal of oneself in both the academic and non-academic aspects. This study is aimed to determine the effect of Learning Outside the Classroom (LOC) primary science module towards enhancing self-concept among marginalized learners' in Malaysia. By employing a quasi-experimental with pre-test post-test, nonequivalent control group research design, a total of some 73 primary school marginalized learners were involved in the study. The treatment group used LOC primary science module while the control group experienced learning using conventional module prepared by the Ministry of Education. In the treatment group, teaching and learning processes occurred outside the classroom using particularly flora and fauna within their surroundings. Self-concept was evaluated using Self Descriptive Questionnaire (SDQ). Data obtained were analyzed using MANOVA repeated measures. Analysis of findings lead to inference that there was a significant main effect of group in shaping the children's self-concept. This study concludes that LOC modules, which carry in itself meaningful and fun science learning experiences has successfully developed marginalized children self-concept. It is then suggested that similar learning modules as developed in this study, be developed across other themes as envisaged in the science primary curriculum for marginalized children.

Keywords: Learning outside classroom, marginalized children, primary science, self-concept, module

Introduction

In a knowledge-based society in the 21st century where information is rapidly changed, education plays a very important and crucial role in meeting the demands for large scale of human capital workforce which based on scientific knowledge. Workplace expectations and scenarios in this 21st century require human capitals who are equipped with competencies to embark in the STEM related careers. This situation also applies to marginalized communities. Therefore, marginalized learners need to upgrade themselves through school education in order to prepare for new era society. Besides reducing individual's gap, the level of competence among every learner should be increased too and this according to Min & Mi (2015) can be done through education in schools. This is because marginalized learners often associated with lower academic achievement and self-concept when compared with learners in the mainstream flow. Such situation is not only happening in Malaysia, but also occurs in other countries such as United States, Canada, New Zealand and Australia (Anderson, 2014; Arens et al., 2014; Bishop, 2010; Bodkin-Andrews, Dillon & Craven, 2010; Chigeza, 2011; McEwan & Trowbridge, 2007; Prout & Hill, 2012). This is consistent with Prout & Hill (2012) which states that there are differences exist globally between the education level of native learners and non-native learners in their respective countries.

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Malaysia, a developing country in the 21st century is constantly working to improve the level of education among its people. Therefore, marginalized learners should strive to improve themselves through education in order not to be left behind in this development when compared with other communities. Through education, marginalized learners can and will be able to move forward and adapt themselves in this new era society. In addition, it also provides the learners for a future that requires knowledge and application skills in a highly competitive job (Trilling & Fadel, 2009)

Efforts to raise the level of education among marginalized learners in Malaysia have always been given serious consideration. Therefore, factors that affect science academic achievement should be identified and studied so that a nation of high competence and high achievers can be realized. Analytical scrutiny of marginalized children talent development often found low self-concept as the most important factor which inhibit their learning development. In recent years, many previous studies showed a positive relationship between self-concept and academic achievement (Craven & Marsh, 2008; Guay, Marsh & Boivin, 2003; Leibham 2005). According to Guay, Marsh & Boivin (2003) and Stipek (2002), self-concept is an important factor in influencing behavior and academic achievement in school as a child will behave in a manner consistent with self-confidence. In addition, OECD (2003) found that many policy documents to support that positive self-concept as an important outcome of education. This is in line with Craven et al. (2008) stating that learners with higher self-concept in academic are more likely to show a better attitude, psychological well-being and showed a good performance in achievement tests.

In addition, conducive and simulative learning environment are very important factors in ensuring effective learning process and that will lead to the enactment of meaningful learning among marginalized learners. Conducive and meaningful learning environment need to be crafted designed to suit their needs and tendencies. Hence, Learning Outside Classroom (LOC) module produced by researchers with the application and implementation of activities based on the environment in the process of the teaching and learning (T&L). Intervention or modules that can determine and enhance the level of self-concept among marginalized learners in primary schools in needed. Therefore, LOC module aims to determine it's effect on self-concept of marginalized learners in Malaysia. Malaysia's desire to become a modern and developed country would be achieved if all communities have a high level of education.

Theoretical Framework of Loc Module

The instructional design model used in LOC module is based on the Morrison, Ross, Kalman and Kemp Model (MRKK) (Morrison et al., 2013). This model became the basis for the development of the module prepared by the researchers in this study. It has nine major elements arranged in an oval shaped cycle and is not linear. This means that the instruction can start anywhere deemed appropriate. The cycle has no starting point or ending point. The process of review and evaluation will take place as an ongoing basis to improve instruction.

LOC module applied several learning theories, namely Behaviorist Learning Theory, Cognitivist Learning Theory, Constructivist Learning Theory and Contextual approach. Behaviorist Learning Theory emphasizes behavioral changes that can be observed and measured by the teacher. Meanwhile, the Cognitivist Learning Theory which emphasizes information processing in the mind also included in this module. Contextual approach that stimulates a person's mind to find meaning in context by making meaningful and relevant relationship to their environment also be applied. The sequence of information presentation during the T&L process is based on Needham's Five Phase Constructivist Learning Theory (Needham, 1987) which involves the orientation phase, eliciting ideas, restructuring of ideas, application of ideas and reflection. With these, it is able to create learning environment that stimulates and increase self-concept among marginalized learners.

LOC module requires teacher to bring marginalized learners out of the classroom for T&L science. This approach is different from the inquiry method practiced by teachers in remote areas where the T&L process always occurs in the classroom. It will give the marginalized learners a more comfortable feeling and a feeling of being close to the environment. This is due to the environment is an important element in their daily lives. Therefore, learning activities involving the environment will be of interest to them (Ma'rof & Sarjit, 2008) and also create a conducive learning atmosphere for marginalized learners.

Although LOC approach can help to build a dynamic knowledge and explore the skills and abilities of learners (Smith & Sobel, 2010), it is not emphasized in the existing module for marginalized learners in Malaysia (CCD, 2013). Therefore, its application in remote schools can be narrowed down to zero. This LOC approach can be

used as an alternative to the T&L method that implemented in schools. With this, hopefully marginalized learners will find science to be interesting to learn. Thus, it will create positive impact on self-concept toward learning science. The conceptual framework discussed can be visualized as shown in Figure 1 below.

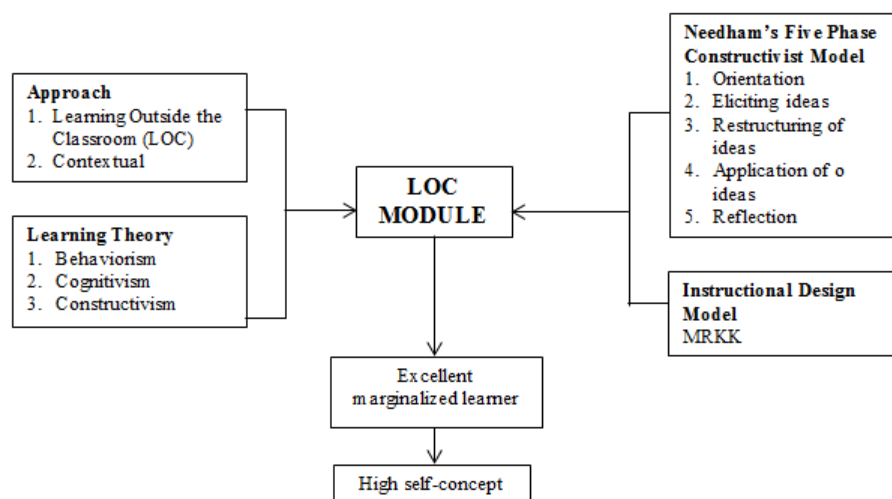


Figure 1. Theoretical framework

Objectives

This study aimed to determine the effects of LOC science module toward enhancing self-concept of Year Two marginalized learners in remote area in Sarawak, Malaysia. It is believed that with the use of this module, it will give opportunity to teachers to implement alternative approach beside the conventional teaching uses inquiry strategies practiced in remote schools in Malaysia.

Methodology

Research Design

This study employed quasi-experimental of the type pre-test post-test, non-equivalent control group design. Both the experimental and control group were tested with pre-test and post-test before and after the intervention implemented as shown in Table 1.

Table 1. Pre-test post-test, non-equivalent control group design

Group	Test	Intervention	Test
Control	Pre-test	Inquiry	Post-test
Experimental	Pre-test	LOC science module	Post-test

This study was conducted in four schools in the remote part in the state of Sarawak, Malaysia. Two schools served as experimental group using LOC science module and two other schools as control group using inquiry module during T&L. The independent variable in this study is the study group, namely control and experimental group. While dependent variable is self-concept. In this study, the topic of 'Plant' has been selected based on a preliminary analysis of the difficulty level of topics in Year Two science subject that was administered to four science teachers teaching Year Two science and 59 Year Three learners in marginalized schools. Both teachers and learners gave the same view that they rated 'Plant' as the one of the most difficult topic in Year Two science subject.

Respondent

The respondents comprised of Year Two learners (8 years old) from four marginalized primary schools in remote part of Sarawak, Malaysia. Since each school has a low number of Year Two learners, each of the control

group and the experimental group need to be covered by a combination of two schools in order to make sure that the number of respondents are more than 30 for each group. Thus, a total of 73 respondents participated in this study in which the control group consisted of 35 Year Two learners and the experimental group consisted of 38 Year Two learners. Schools are selected based on criteria such as the level of learners' competency (based on the results of the Primary School Achievement Test) and school band category.

Instrument

Instrument used in this study is Self-Concept Questionnaire (SCQ). SCQ was taken from Leibham (2005), which adapted from Self Descriptive Questionnaire - I (SDQ - I) in Marsh (1990). However, only three categories in SDQ - I were selected for this study, namely general construct, science construct and social construct. After the verification process by experts and pilot test conducted, SCQ contain 18 items which consists of 6 items from general construct, 5 items from science construct and 7 items from social construct in the form of a 3-point Likert scale of "1 = Not True", "2 = Not Sure" and "3 = True". The reliability of SCQ is high with alpha Cronbach coefficient value more than 0.70.

Procedure

After pilot test, correction and improvements was done to the module and instrument before administered them in the actual study. SCQ was administered to respondents in both groups before the T&L on plants as pre-test to determine the homogeneity level of self-concept between the control and experimental groups. Control group used inquiry module while experimental group used LOC module during T&L session. A five-week period is required to complete the 'Plants' topic. At the end of the T&L session, SCQ administered again to the same respondents in both groups as post-test. SCQ administered by the provisions of the same time taken before and after the T&L session on 'Plant' topic in both control and experimental groups.

Analysis

Quantitative data obtained through SCQ before and after the T&L session in both the control and experimental groups were analyzed using descriptive statistics and inferential statistics. All data compiled and summarized in table form for easy analysis reports and presentations made.

Independent samples T-test conducted on the data collected during the pre-test to determine the level of homogeneity of the self-concept between the two groups involved. MANOVA 2x2x3 repeated measures analysis was used to determine the effect of LOC science module in enhancing self-concept. Repeated measures involves two study groups (control and experimental), two time (pre-test and post-test) and three constructs of self-concept (general, science and social).

Research Findings

Homogeneity Of Self-Concept

Homogeneity analysis of the level of self-concept between the control and experimental groups using T-test Independent samples at the 0.05 significant level found that there was no significant difference between control and experimental groups with pre-test mean score of self-concept, $t = 1.940$ and $df = 71$, $p > 0.05$. The findings show the control and experimental groups were homogeneous in terms of self-concept before the study was conducted. The homogeneity between the two groups allows comparison to be performed on the effects of LOC science module in the learning of 'Plant' topic among marginalized learners. Table 2 shows the analysis of the Independent-samples T-test of pre-test mean score for self-concept according to groups.

Table 2. Independent t-test pre-test mean score of self-concept according to groups

Dependent variable	t	df	p	Mean Difference
Pre-test self-concept	1.940	71	.056	.109

Self-Concept

MANOVA repeated measures 2x2x3 analysis was used to determine the effect of LOC science module in enhancing self-concept. The findings showed that there was significant main effect of group on self-concept [$F(3, 69) = 4.618, p > 0.025$] with an effect size of 0.167. Data showed that there was no significant main effect of time on self-concept [$F(3, 69) = 2.016, p > 0.025$] with effect size of 0.081. The effect of the interaction between time with the group is also not significant to the self-concept [$F(3, 69) = 0.766, p < 0.025$] with effect size of 0.032. Results are shown in Table 3 below.

Table 3. Multivariate test

Effect	Pillai's Trace Value	F	df1	df2	p	Partial Eta Squared
Group	0.167	4.618	3	69	0.005	0.167
Time	0.081	2.016	3	69	0.12	0.081
Group * Time	0.032	0.766	3	69	0.517	0.032

Significance level = 0.025

However, further analyses as shown in Table 4 found that there is no significant main effect of group on all the three constructs of self-concept, namely general construct [$F(2, 69) = 1.675, p < 0.025$] with an effect size of 0.023, science construct [$F(2, 69) = 3.016, p < 0.025$] with an effect size of 0.041 and social construct [$F(2, 69) = 2.143, p < 0.025$] with an effect size of 0.029. This means that the level of self-concept among marginalized learners generally has not been increased significantly.

Table 4. Effect within subjects test

Effects	Dependent Variable	Squared Total	df	Mean Squared	F	p	Partial Eta
Group	General	0.341	1	0.341	1.675	0.200	0.023
	Science	0.484	1	0.484	3.016	0.087	0.041
	Social	0.295	1	0.295	2.143	0.148	0.029

Significance level = 0.025

Discussion

The findings indicate that the LOC science module is not effective in enhancing self-concept among marginalized learners as a whole. Although result showed significant main effects of group, but further analyses indicate no significant main effect on all the three constructs of self-concept. This concluded that LOC science module did not give significant positive impact toward self-concept of marginalized learners in this study. But for descriptive comparison purposes, it can be said that LOC science module is better than the inquiry module. This is because marginalized learners in the control group showed decreased in the level of self-concept whereas it increased in the experimental group. But the level of increment of self-concept among marginalized learners in the experimental group is not significant.

Failure to increase the level of self-concept among marginalized learners did not necessarily represent that the LOC science module is not good. Such insignificant increase may likely due to the change of strategy or approach of T&L used by teachers in the experimental schools that creates negative impact on self-concept of marginalized learners. A drastic change from the inquiry approach to the implementation of activities that are more learner-centered in LOC module has brought something unusual and uneasy for these marginalized learners. This resulted in negative impact which Ayla (2016) also reported in the study that carried out in Turkey.

Another reason may be related to the existing level of marginalized learners' self-concept for learning as a whole. Many studies reported that these marginalized learners have lower cognitive level compared with mainstream learners. This directly affects the self-concept of marginalized learners where the level is still considered low and is at an unsatisfactory level. Abdull Shukor Shaari et al. (2011) and Asnarulkhadi Abu Samah et al. (2007) also reported that marginalized learners in Malaysia do not show enthusiasm in the learning

process. The learning process only occurred when they are in school and not at home. Moreover, marginalized parents were less attentive and less concerned with their children's education.

Conclusion

LOC module used in this study found no significant positive impact towards improving the self-concept among marginalized learners in Malaysia toward the topic of 'Plant'. The self-concept among marginalized learners still remain at unsatisfactory level despite various initiatives have been undertaken by the Ministry of Education. Continuous low level of self-concept among marginalized learners will bring them at risk of being left behind in the aspect of education. This is taken seriously especially by educators because it will lead to increase dropout rates and science academic achievement degradation if not managed properly. Therefore, drastic measures and more practical intensive programs such as curriculum that integrates the environment and culture of marginalized people must be created so that marginalized learners can see the relevance of science learned at school in their daily lives. As reported by Ayla (2016), a review of the science curriculum that is more focused on matters relating to life directly affect the environment in the classroom and in turn have a positive impact on learners learning in Turkey. In addition, the new curriculum for marginalized learners need more focus on aspects of psychomotor and affective than cognitive as practiced by mainstream learners. This is because marginalized learners are poor in cognitive aspect when compared with mainstream learners. The aim is to produce human capital among marginalized communities in the 21st century for a future that requires knowledge and skills in a job application that is highly competitive.

References

- Abdull Shukor Shaari, Nuraini Yusoff, Mohd Izam Ghazali, & Mohd Hasani Dali. (2011). Kanak-kanak minoriti orang asli di Malaysia: menggapai literasi bahasa melayu (Aboriginal minority children in Malaysia: achieve malay language literacy). *Jurnal Pendidikan Bahasa Melayu*, 1(2), 59-70.
- Anderson, R. (2014). Grade repetition risk for indigenous students in early schooling in Queensland, Australia. *Procedia Social and Behavioral Sciences*, 114, 744-748.
- Arens, A. K., Andrews, G. B., Craven, R. G., & Yeung, A. S. (2014). Self-concept of indigenous and non-indigenous Australian students: Competence and affect components and relations to achievement. *Learning and Individual Differences*, 32, 93-103.
- Asnarulkhadi Abu Samah, Maria Mansor, Zahid Emby, Mariani Mansor, & Hanina Hallimatusaadiah Hamsan. (2007). Kurikulum Bersepadu Orang Asli/ Penan (KAP) – Satu Pendekatan Baru dalam pembangunan Pendidikan Komuniti Orang Asli/ Penan (Integrated Curriculum for Aboriginal / Penan (KAP) - A New Approach in the Development of Aboriginal Community Education / Penan). In Seminar Kebangsaan Sains Sosial: Sains Sosial Teras Pembangunan Modal Insan (National Seminar on Social Sciences: Social Science Core Human Capital Development), 20-21 Mei 2007, Kuala Lumpur.
- Ayla, C. (2016). Student motivation in constructivist learning environment. *Eurasia Journal of Mathematics, Science & Technology Education*, 12(2), 233-247.
- Bishop, R. (2010). Effective teaching for indigenous and minoritized students. *Procedia Social and Behavioral Sciences*, 7(C), 57-62.
- Bodkin-Andrews, G. H., Dillon, A., & Craven, R. G. (2010). Bangawarra' gumada strengthening the spirit: causal modelling of academic self-concept and patterns of disengagement for indigenous and non-indigenous Australian students. *Australian Journal of Indigenous Education*, 39, 24-39.
- Chigeza, P. (2011). Cultural resources of minority and marginalised students should be included in the school science curriculum. *Cultural Studies of Science Education*, 6, 401-412.
- Craven, R. G., & Marsh, H. W. (2008). The centrality of self-concept construct for psychological wellbeing and unlocking human potential: Implications for child and educational psychologists. *Educational and Child Psychology*, 25, 104-118.
- Craven, R. G., Yeung, A. S., McInerney, D. M., & Liem, G. A. (2008). *International best practice in effective educational interventions: why self-concept matters and examples from bullying, peer support, and reading research*. Teaching and Learning: International Best Practice. Information Age Publishing Inc.
- Curriculum Development Devison, CCD. (2013). *Kurikulum Standard Sekolah Rendah Murid Orang Asli dan Penan (KAP). Modul Pengajaran: Dunia Sains dan Teknologi Tahun Dua* (Primary School Standard Curriculum Students Aboriginal and Penan (KAP). Teaching modules: The World of Science and Technology Year Two). Putrajaya: Bahagian Pembangunan Kurikulum.
- Guay, F., Marsh, H. W., & Boivin, M. (2003). Academic self-concept and academic achievement: Developmental perspectives on their causal ordering. *Journal of Educational Psychology*, 95, 124-136.

- Leibham, M. E. (2005). The impact of interest on elementary school children's self-concepts, intrinsic motivation, academic achievement, and willingness to broaden knowledge. (Unpublished doctoral dissertation). Indiana State University.
- Ma'rof, R., & Sarjit, S. (2008). *Orang asli: isu, transformasi dan cabaran*. Selangor: Penerbit Universiti Putra Malaysia.
- Marsh, H. W. (1990). A multidimensional, hierarchical self-concept: Theoretical and empirical justification. *Educational Psychology Review*, 2, 77-172.
- McEwan, P. J., & Trowbridge, M. (2007). The achievement of indigenous students in Guatemalan primary schools. *International Journal of Educational Development*, 27, 61-76.
- Min, K. K., & Mi, K. C. (2015). Design and implementation of integrated instruction of mathematics and science in Korea. *Eurasia Journal of Mathematics, Science & Technology Education*, 11(1), 3-15.
- Morrison, G. R., Ross, S. M., Kalman, H. K., & Kemp, J. E. (2013). *Designing effective instruction*. 7th Eds. NJ: John Wiley & Sons, Inc.
- Needham, R. (1987). *CLIS in the classroom: Teaching strategies for developing understanding in science*. Leeds: University of Leeds.
- Organization for Economic Cooperation and Development, OECD. (2003). *Student engagement at school: A sense of belonging and participation*. Paris: Organization for Economic Cooperation and Development.
- Prout, S., & Hill, A. (2012). Situating indigenous student mobility within the global education research agenda. *International Journal of Educational Research*, 54, 60-68.
- Smith, G., & Sobel, D. (2010). *Place and community based education in school*. United Kingdom: Routledge: Taylor & Francis.
- Stipek, D. (2002). *Motivation to learn: Integrating theory and practice*. 4th Edition. Boston: Allyn and Bacon.
- Trilling, B., & Fadel, C. (2009). *21st century skills: learning for life in our times*. San Francisco, CA: Jossey-Bass.