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ORIGINAL ARTICLE

The Effectiveness of Health Education Assessment Module for Lower Primary Students in Classroom-Based Assessment

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ABSTRACT

Background. This study aims to develop a Health Education assessment module in the classroom for lower primary students. **Methods.** This study aims to identify the effectiveness of the health education assessment module for lower primary students by implementing it in the classroom-based assessment. The methodology design used in this study is the design and development research (DDR). The paper focused on the third phase of the design, which is an assessment of the module. The instrument used in this phase is the quasi-experimental to identify the effectiveness of assessment material, the assessment module for lower primary students in classroom-based assessment. Sixty year-one students were used as a control group and experimental group for this study. Pre and post-tests are given to determine the effectiveness of the Health Education assessment module. The data of this study has been analyzed using ANCOVA. **Results.** Research findings show the effectiveness of the stated module in increasing lower primary students' knowledge of Health Education subjects. Based on the findings, there was a significant difference between the experimental group (mean = 84.1, standard deviation = .605) and the control group (mean = 50.61, standard deviation = .605). The mean difference between the two groups was 34 points scale, with a 95% confidence interval range. Also, the effect of size between groups is high, with the statistical value of eta squared $\eta\eta^2 = 0.952$. **Conclusion.** Therefore, based on the findings of this study, the Health Education assessment module that has been developed effectively improves students' knowledge in the context of this study.

KEYWORDS: ***Health Education, Assessment Module, Classroom-Based Assessment, Quasi-Experimental.***

INTRODUCTION

School-Based Assessment (PBS) was introduced in line with the requirements of the National Education Philosophy (FPK) based on the Examination Board Release Letter (Surat Siaran Lembaga Peperiksaan) No. 3/2011. PBS is a holistic assessment that measures cognitive, affective, and psychomotor aspects in line with FPK, emphasizing the JERIS aspect. Teachers have a crucial role in assessing student learning. Teachers need assessment skills to ensure the quality of assessment in the classroom. However, there are weaknesses among teachers when conducting evaluations. The implementation of assessment in schools has not fully achieved the goal (1, 2) also continued the study by concluding that teachers face many challenges in implementing classroom-based assessment (PBD), causing problems for teachers in carrying out PBD effectively. Therefore, Ahmad and Mahamod (1) suggested that studies related to PBD be multiplied as PBS is a new transformation in Malaysia. With the abolition of

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examinations among level one students, PBD has become an assessment tool to assess student performance. The effectiveness and success of PBD depend a lot on the commitment of teachers.

The practical assessment can provide information to teachers, administrators, parents, and students, related to students' knowledge and understanding. A variety of ways can implement PBD. One of the assessment methods is by using an assessment module. Researchers have used modules in various fields and studies in the past. Özen (3) used a module to help a pupil who had a motivation problem in learning and proved that module usage could enhance students' performance in learning. Her opinion parallels (4), which states that the module has assessment features enabling the student to get feedback on comprehension level and their achievement in learning. So the researcher creates an assessment module for Health Education that can be used in PBD for lower primary students to assess their knowledge of the subject.

Education and assessment are critical assets that play a role in shaping a high moral society to become the nation's aspirations. Assessment in education acts as a pioneer of social transformation to build a system of society that can take steps as a leader in innovation globally. According to a study (5), assessment in the 21st century is to help students improve their skills and values towards education to prepare themselves to face future challenges globally, solve problems, adapt skills to work as a team, and have self-management abilities.

According to some studies (6-8), assessment can be meant to collect data on student progress and student development through methods such as written, oral, and observation tests. This method helps to decide student learning and teacher teaching. The implementing agent has a great responsibility to provide different assessment methods to ensure that the potential and knowledge of the students are evaluated as a whole.

There are two types of assessment in Malaysia: centralized and internal assessments. Centralized assessment is conducted by the Malaysian Examinations Board (LPM), and the school conducts the internal assessment. The implementation of the assessment is in line with the classification by Shepard (9), which is a centralized assessment known as an "external assessment" in the form of a summative. In contrast, internal assessment is known as "internal assessment" in the form of formative.

The assessment system implemented in this country is a modification of the assessment standards implemented in Australia, namely the New South Wales Higher School Certificate (NSW HSC) and Victoria's Curriculum and Standards Framework (Victoria's CSF). To control the curriculum's content and continue the quality of education in primary schools to ensure that the accountability of certification standards is maintained, KPM has established a centralized assessment called the Primary School Assessment Test (UPSR), (KPM 1988). The examinations are conducted simultaneously throughout the country according to the set schedule. The invigilator of the study is chosen among the school teachers. The assessment procedure is confidential and involves two approaches: norm reference test and criteria reference test. The results of this assessment are final, but parents can still review their child's effects within the period given by LPM.

According to the Malaysian Examinations Board (LPM) (2012), excessive emphasis on academic achievement can pressure teachers, parents, and students. The pressure on teachers who need to complete the syllabus causes assessment to be neglected, and it is less helpful in teaching and learning. There are also allegations from various parties that say that our country's education system is only exam-oriented.

Therefore, an effort has been made to elevate the teaching profession and improve teaching and learning quality. On 17 December 2010, the cabinet meeting unanimously decided to implement PBS in all schools as the beginning of the educational transformation program. PBS began operations in all primary schools in 2011 and secondary schools in 2012. This change is considered an essential effort as even developed countries change their education assessment system to improve the quality of their education system. (LPM, 2012).

School-Based Assessment is an effort to develop a balanced human capital by emphasizing the practice of ethics and values, knowledge, and cultivating progressive attitudes and intellectual capital as suggested in the Education Development Master Plan (PIPP), National Integration Plan (PIN), and mission national. According to the Examination Board Release 3/2011, there are four essential components under

PBS, namely school assessment (PS), central assessment (PP), physical activity assessment, sports and co-curriculum (PAJSK), and psychometric assessment, and these components are to ensure achievement a student not only by examination. In 2014, to further strengthen the implementation of School-Based Assessment (PBS), KPM carried out a review and made improvements to its performance to be more teacher-friendly (Examination Board Circular No. 1/2014). In 2016, one of the components of PBS, namely school assessment, was changed and named Classroom Assessment (PBD).

Although school assessment (PBS) has been converted to classroom assessment (PBD), the concept of assessment and determining the level of mastery of students in each subject is still maintained (Curriculum Development Division, 2018). Teachers act as PBD implementing agents to ensure teaching and learning objectives are achieved. PBD is implemented as an assessment for learning (assessment for learning), assessment as learning (assessment as learning), and assessment of learning (assessment of knowledge).

Curriculum Development Division (BPK) (2018) explains that assessment for learning is referred to as formative assessment. Assessment for learning is part of the teaching and learning process. The information obtained from this assessment can be used to plan strategies or next steps in teaching towards improving student learning and mastery. This assessment is also known as a diagnostic assessment. There are various ways that teachers can use their creativity to assess their students' skills. An example of an assessment for learning is a question-and-answer activity that the teacher can carry out during a lesson. The purpose of the question and answer is to identify students' knowledge, skills, and values. The information obtained from the question and answer activity will help teachers plan and implement the following teaching and learning.

Assessment as learning (assessment as learning) occurs when students reflect on and evaluate their learning development. This allows them to understand the purpose of their learning and realize what they should do to master a learning objective. Assessment as learning consists of self-assessment and peer assessment. The information from this assessment gives students an indication of their level of mastery in learning. An example of review as learning is that students build a concept map of what has been learned to demonstrate their understanding and relationship with current knowledge. This allows them to understand what needs to be achieved and what should be done. Assessment as learning encourages metacognitive thinking that will enable students to learn and think about how they know. Learning assessment occurs at the end of a period, title, or field of learning. Usually, the evaluation takes the form of a summative test.

Assessment of learning can also take the form of a presentation of project results. Information and data obtained from summative tests or assessments about this learning should be addressed positively in the student learning process. All assessment data is not intended for comparison between students. The purpose of this summative test data or score should be used to help teachers, parents, and the school improves the level of student mastery. In addition, teachers also use the data to plan and implement more constructive and meaningful strategies in encouraging students' active involvement in learning, advancing their learning in the future, thereby improving their mastery and achievement in learning. It is not intended for comparison between students. Information and data from this summative assessment can also be a primary indicator of student achievement on a topic before moving on to the next issue or lesson. Classroom assessment (PBD) became more important and mandatory for all teachers when our country's Minister of Education, Dr. Maszlee Malik, announced the abolition of examinations for level one students on 31 October 2018. His statement was enforced following Professional Circular(SPI) No. 14 / 2018 (2018).

Referring to the professional examination letter no. 14/2018, mid-year, and end-of-year examinations have been abolished for all subjects for primary school students. The concept of exam abolition also creates a more conducive and exciting teaching and learning situation. With the abolition of examinations among level one students, PBD has become an assessment tool to assess student performance. Practical assessment can provide information to teachers, administrators, parents, and students, related to students' knowledge and understanding. The implementation of PBD by teachers allows schools and parents to get qualitative and quantitative feedback about students (1). Although the Professional Examination Letter

(SPI) 14/2018 has stated various examples of activities such as simple projects, games, quizzes, storytelling, and role-play for the implementation of PBD according to the data analysis needs of this study, there is still 46.7 percent of instructors do not implement PBD after teaching and learning (1) study found that the implementation of assessment in schools has not fully achieved the goal.

Physical education and Health Education (PJK) subjects are also elective subjects that should be taught and assessed in schools. Therefore, PJK did not escape from PBD, but the results of interviews with Physical Education and Health (PJK) teachers, namely Yogeswari, Aznee Fazilah, and Norlela, during personal communication on 18 April 2015, stated that PJK teachers are busy with work routines at school, by that is, they can not build an assessment material to assess their students this situation causes them to buy assessment materials such as exercise books and assessment materials in bookstores, book suppliers and download from the internet. According to a study (10), 66.7 percent of teachers do not produce assessment materials due to time constraints and excessive workload. The statement was further strengthened by the results of a personal communication interview with the drafter of the PJK textbook on 10 December 2018, which stated that the Ministry of Education Malaysia (KPM) only provides books and does not provide any assessment materials to assess students' skills and level of mastery PJK subject. When teachers do not build assessment materials but only buy them from suppliers or download them from the internet, then there are questions about the validity, reliability, and quality of assessment materials used to assess PJK during PBD.

Teachers' assessment skills enable students to achieve the learning objectives and skills required in the curriculum (1). There are also statements stating that PJK teachers are not skilled in building assessment materials and do not understand assessment (11). This statement is further strengthened by a study (12), which stated that most teachers who teach PJK subjects are still unskilled in constructing assessment items, lack understanding and are less clear on the meaning of reliable assessment and have validity and do not have the skills to assess and evaluate the results of the assessment. It is in line with the statement of a study (10), which stated that teachers in schools face problems and competencies in constructing question items and the implementation of the PJK assessment.

Not only that, referring to the examination board circular letter No. 1/2014 (LPM, 2014) and PBS implementation handbook (LPM, 2014), assessment in schools should be implemented comprehensively, including assessment for learning, assessment as learning, and assessment about learning but an assessment for PJK subjects in primary schools still does not meet the requirements of PBS which have been outlined in the PBS implementation handbook (LPM, 2014). This is because 42.6 percent of teachers who teach PJK in primary schools have never attended any course related to the subject and 49.1 percent of teachers who teach PJK are non-PJK optional teachers.

Most teachers in schools implement the assessment and evaluation process only based on existing questions and worksheets to assess school children's level of learning achievement. Therefore, the question items and worksheets used by teachers in schools are not comprehensive and not holistic. A study (13), on the other hand, found that teachers failed to monitor student learning due to a lack of knowledge, unfair decision making, and teaching planning weaknesses to yield to unearth the real potential of students and resulting in inaccurate student performance reporting.

The assessment of PJK subjects conducted by teachers in primary schools does not comprehensively evaluate the three main domains of Health Education subjects, namely psychomotor, cognitive, and affective domains. According to an study (14), PJK has elements that represent an essential role in developing students as a whole through integrated learning experiences. According to another research (15), the results of interviews recorded in her study with two PJK option teachers stated that psychomotor domain assessment is carried out by observation only while cognitive and affective domains are through mid and end-of-year examinations.

Wan Omar's study (2019) also concludes that teachers face many challenges in implementing PBD to causes problems for teachers in carrying out PBD effectively (2). By implementing PBD, teachers can assess students comprehensively in terms of cognitive, psychomotor, and effective, in line with the goals of FPK, which emphasizes the

aspects of JERI (Ministry of Education Malaysia, 2018). The implementation of assessment in the classroom can also help improve students' weaknesses in lessons (16) suggested that studies related to PBD be multiplied as PBS is a new transformation in Malaysia. Therefore, researchers have planned to develop a Health Education assessment module for first-year teachers to be able to carry out classroom assessments (PBD) with confidence.

So the main question is that is there a significant difference between the treatment group and the experimental group in the lower primary student's knowledge achievement towards Health Education subjects using the Health Education assessment module.

MATERIALS AND METHODS

Study Design. This study uses the design and development (DDR) methodology. There are three phases in the approach: the needs analysis phase, the design and development phase, and the implementation and evaluation phase. Researchers focus on the implementation and evaluation phases in this research paper. A total of 60 students from Bedong national school were randomly selected. The Health Education assessment modules were tested for effectiveness using pre and post-tests. The sixty students were separated into two groups: the control group and the experimental group. They were divided into two groups after referring to the school administrators.

A quasi-experimental study determined the effect of pre-and post-test interventions between the two groups. The quasi-experiments that test the module's effectiveness are empirical studies that test the impact of the intervention on a group that has similarities to the experimental study (17).

Statistical Analysis. Pre and post-tests were conducted for eight weeks. Pre-tests were given in the first week, and their scores were recorded, and after eight weeks, the post-test was given to the experimental and control groups to obtain inference data (ANCOVA). ANCOVA is used for a study design consisting of two groups, namely pre-test and post-test (18). ANCOVA was used to test the effectiveness of the Health Education module in the implementation of classroom-based assessment (PBD).

RESULTS

The important value to be seen in the table is the significant level of interaction value between the independent variable (group) and the value of the covariate variable (pre-test). The value of p should exceed $P > 0.05$ (18). If its value is <0.05, the data are out of the ANCOVA assumption (Ahmad Hassim, 2014). Therefore, the researchers have ensured that the interaction effect is insignificant or the value is greater than .05. Based on Table 1, the significant value is $F (1, 56) = 1.992$, $P = 0.164$, $P > 0.05$, which is insignificant and greater than the value of 0.05. Thus the assumption of homogeneity of variance for ANCOVA can be complied with and continued. After ANCOVA's first assumption was complied with, the researchers conducted Levene's Test of Equality of Error Variance in compliance with ANCOVA's second assumption. It is explained in Table 2 as follows:

Table 2 shows that the value of Levene's Test of Equality of Error Variance, $F (1, 58) = 0.976$, $P > 0.05$, is insignificant. Then all these variables equal variance and do not violate the assumption. The primary purpose of a covariate is to determine the relationship between the covariate (pre-test score) and dependent variable (post-test score) by controlling factors (experimental and control groups).

Table 3 of the test of the between-subject effect shows in more detail the significant differences between the experimental and control groups' independent variables. The value of p is equal to .000 ($P <0.05$). This means that there are significant differences. This analysis shows a substantial difference in the post-test score of the Health Education written test between the experimental group and the control group after the covariate (pre-score) of the written test of Health Education subjects was controlled. ANCOVA analysis results show 95 percent (.952 x 100). The independent variable can explain the variant of the group's dependent variable (post-score). The table also explains no significant correlation between the dependent variables (post-score) of the Health Education written test with the covariate variable (pre-score) of the Health Education written test by controlling the dependent variable p equal to .064. Based on the value of the partial score (0.059), only a 59 percent (.059 x 100) variant of the dependent variable (post score) Health Education written test can be explained by the covariate variable (pre score) Health Education written test. After controlling the pre-test scores, the inferential statistical analysis showed a significant difference in the post-test scores of Health Education written between the experimental group and the control

group, F (1,57) = 1132.828, P = 0.001, eta square = 0.952. The analysis showed a moderate correlation (r = 0.059) and insignificance between the pre-test score of Health Education before the intervention with the post-test score of the post-intervention test. ANCOVA analysis showed a significant effect of independent variables (treatment and control groups) by controlling the impact of the covariate (pre-test scores). So the first null hypothesis is rejected.

Based on estimated marginal means, it was reported that the experimental group obtained a post-test score (M = 84.12a), higher than the control group (M = 50.63a) in the post-test, as in Table 4. The analysis showed that the mean difference in post-test scores for Health Education written test was significant. Mean scores differ significantly, and score differences are enormous at more than 34 scale points.

Table 1. Homogeneity of Variance

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	18274.297[a]	3	6091.432	875.485	0.000
Intercept	310.541	1	310.541	44.632	0.000
Group	3.482	1	3.482	.500	0.482
Score-pre	21.544	1	21.544	3.096	0.084
Group * Score-pre	13.859	1	13.859	1.992	0.164
Error	389.636	56	6.958		
Total	290960.000	60			
Corrected Total	18663.933	59			

R Squared = 0.979 (Adjusted R Squared = 0.978)a
Computed using alpha = 0.05b

Table 2. Levene's Test of Equality of Error Variances

Dependent Variable			
F	**df1**	**df2**	**Sig.**
0.001	1	58	0.976

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
Design: Intercept + PreScore + Groupa

Table 3. Test of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	18260.43[a]	2	9130.219	1289.787	0.000	0.978
Intercept	304.805	1	304.805	43.058	0.000	0.430
Score-pre	25.172	1	25.172	3.556	0.064	0.059
Group	8019.12	1	8019.129	1132.828	0.000	0.952
Error	403.495	57	7.079			
Total	290960.00	60				
Corrected Total	18663.93	59				

R Squared = 0.978 (Adjusted R Squared = 0.978)a, Computed using alpha = 0.05b

Table 4. Estimated Marginal Mean

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1. Experimental	84.121[a]	.605	82.910	85.332
2. Control	50.613[a]	.605	49.402	51.824

[a] Covariates appearing in the model are evaluated at the following values: Pre-test written scores = 43.50.

DISCUSSION

The Health Education assessment module that has been developed successfully enhances students' knowledge in the context of this research, based on the results of this study. The research found that modular evaluation showed a substantial change for the experimental group but not for the control group. At the same time, one aspect of emotional intelligence was lower for the pre-test experimental group. This module will be used to help develop the emotional maturity of pre-school children as an impressive teaching aid that is good for pre-school teachers.

Evaluation plays a role in assessing student learning (19). In promoting learning and enhancing student success indirectly, close cooperation between students, educational institutions, and learning programs, appraisal methods such as modules, and accurate feedback are essential (20). The research also supports by some studies (21) in concluding that teacher appraisal and input can enhance student performance. Feedback suitable to the age of student growth and in the form of inspiration helps students consider the errors made and guide students to carry out self-learning to enhance their mastery (22). The guidance presented helps students on their own to make corrections. They discuss difficulties encountered, find solutions, or question teachers about topics or theories that are not known (23). This is consistent with the Behaviorism Learning Philosophy (24), which stresses the importance of constructive reinforcement in optimizing learning for students.

This research is further validated by a study (25), which demonstrates a substantial relationship between teacher evaluation and student progress in terms of academic performance, co-curricular, and student personality. Evaluation events aim to enhance student skills and mold student progress (26). This is analogous to Bandura's Social Learning Theory (27), which notes that the knowledge shown in the mind is perceived and stored by students, and then the action is presented. Through the incidence of repetitive repetition or practice, constant behavior or attitude is established in the individual. Quizzes, assessments, and writing evaluations of modules and evaluations that are frequently carried out by teachers while teaching and studying are the most appropriate evaluations used to direct student progress in learning (23). Students' constructive interest in education lets students gain information and create knowledge (28). The module-based assessment will ultimately improve students' understanding of the subject that has been evaluated.

CONCLUSION

The findings of this study will give implications for various parties, especially the schools and students. Teachers' duties include ensuring that students are motivated to do their best in any assessment, conducting fairly and equitably, and ensuring accurate assessment results. Ongoing assessment throughout the year enables teachers to play the role of assessors to ensure the development and knowledge of student learning. With student assessment information, teachers can find out the strengths and weaknesses of students and then plan and modify teaching. Other than that, the feedback given to the students also helps them know their weaknesses so that improvements are made to improve student achievement. Strictly speaking, the level of implementation of teacher PBD is essential in creating quality education. Given the level of performance of PBD, teachers play a fundamental role among teachers. Therefore, the study proves that the Health Education assessment module is helpful for lower primary students. It has significantly improved Bedong national school students' Health Education knowledge by implementing classroom-based assessments done by lower primary Health education teachers.

APPLICABLE REMARKS

- In primary schools, assessment modules for Health Education should be used as a way to improve the quality and effectiveness of teaching and learning.
- Consideration needs to be taken by teachers when implementing the assessment module in school, as different schools and student statuses might affect the assessment approach used such as Apps, softcopy, and hardcopy.

AUTHORS' CONTRIBUTIONS

Study Concept and Design: Kumaran Gengatharan, Azali Rahmat, Zulezwan Ab Malik. *Acquisition of data:* Kumaran Gengatharan, Nor Fazila Abd Malek. *Analysis and interpretation of data:* Kumaran Gengatharan, Azali Rahmat, Zulezwan Ab Malik, Nor Fazila Abd Malek. *Drafting of the manuscript:* Kumaran Gengatharan, Azali Rahmat, Nor Fazila Abd Malek. *Critical revision of the manuscript for important information*: Kumaran Gengatharan, Azali Rahmat, Zulezwan Ab Malik. *Statistical analysis:* Kumaran Gengatharan, Azali Rahmat. *Administrative, technical, and material support:* Kumaran Gengatharan, Azali Rahmat, Zulezwan Ab Malik, Nor Fazila Abd Malek. *Study supervision:* Azali Rahmat, Zulezwan Ab Malik.

CONFLICT OF INTERESTS

There are no conflicts of interest to declare by any of the authors of this study.

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